FEBRUARY 7, 1942

Railway Age

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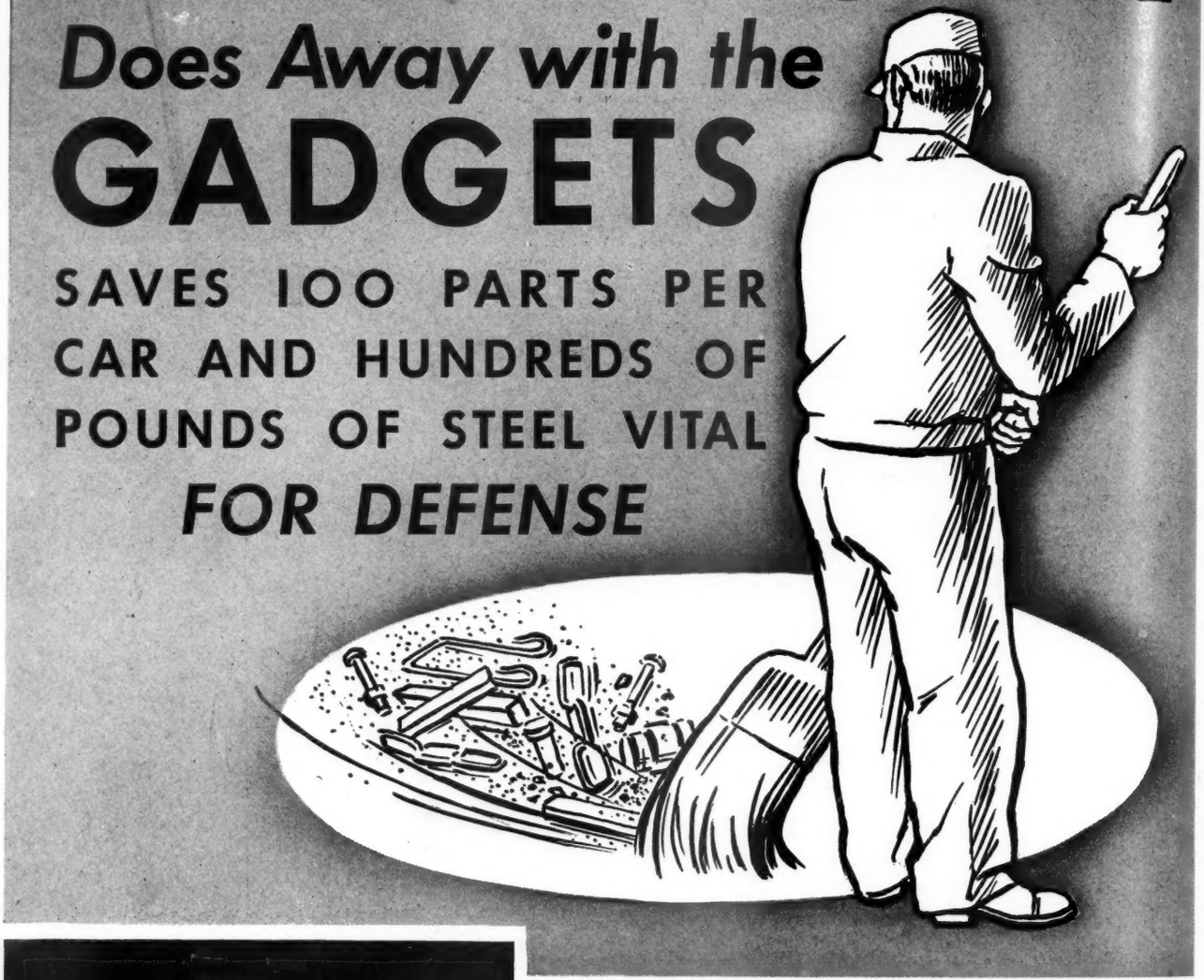

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Another Operating Problem Solved *by* "Union" C.T.C.

WHERE many of the passing sidings on a double track railroad are too short for the length of freight trains necessitated by the traffic and, as a result, slow up service, the solution is "Union" C. T. C. Where this system has been installed, sidings are seldom used on double track lines which have been equipped for either direction operation on both tracks by signal indication, because trains are generally kept *moving* on one main track or another.

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The Week at a Glance

HOW TO SOCIALIZE RRs: An industrial traffic manager recommended to his boss that plant managers be instructed to disregard "free time" allowances on freight cars and release them as quickly as possible. The chief objected that the railroads weren't pulling the cars as fast as they were ready anyhow—so why should the shipper break his neck getting them ready to move? Of course, the railroad was to blame for not setting the example in being on its toes to keep its cars alive—but where, the leading editorial herein inquires, is *voluntary* co-operation as a substitute for federal control going to get in the present emergency if first one fellow and then another lies down on the job, using as excuse the "other fellow's" shortcomings? Just a slight epidemic of this attitude would be all it would take to give the carriers and their customers government operation to worry about.

●

WHY PRIVATE OPERATION?: The railroads have been long looked upon as the industry ripest for harvest by the socialists—and yet this business is less likely game for socialization today than it was 25 years ago. This is the kind of paradox which those of us close to it always tend to accept as natural—but which, later on, puts the historians up against it to try to explain. *Why are we so fortunate, and what do we need to do to keep on being so?* The leading editorial herein suggests the degree of co-operation that carriers and customers have learned since the last war as the explanation of the present situation and cautions that present national needs require still more of it. The best defense against socialization is to do such a good job of pulling together voluntarily that socialists themselves wouldn't even dare claim their ability to do so well.

●

SNIPING AT THE ODT: The railroads and their customers can't hope to get any *better* set-up than they have under ODT, can they? That is, they cannot expect that, during the war, they will have *less* government supervision than that now provided. Any change, therefore, is bound to be for the worse—toward less freedom and more government. Under the circumstances, it is to the interest of everybody in and around the railroads to help Mr. Eastman and his staff make a success of their job. The leading editorial suggests that pot-shots which have been aimed at the ODT staff are a disservice to the transportation business, especially the railroads, as well as an injustice to the victims of this criticism—who, incidentally, are not in a position to defend themselves.

●

CREOSOTE SHORTAGE: More timber was treated in 1941, probably, than in any year since 1930. In the nine months ended September, 1941, importations of creosote totaled 13 million gallons—and the aggregate figure for the whole year won't exceed that figure much. This would be only about one-third as much creosote as came into the country in 1940. The outlook for larger 1942 importations is not brilliant. These and other significant disclosures were made to the Wood Preservers' Convention, reported herein, in an address by George M. Hunt of the Forest Products Laboratory. The wood preservers, breaking long precedent, accepted new formulas for timber treatment which depart from standard creosote and zinc chloride preservatives.

●

HEAVY CAR-BUYING AGAIN: Almost 8,500 freight cars were ordered in January—the biggest total since July, 1941. Orders had been held back because of the slowness of the builders (stymied for lack of materials) in turning out jobs already on their books. But the situation brightened greatly in January. In December 7,000 cars were completed, and the priority authorities announced that they were letting loose enough material to turn out 9,000 cars a month in the first one-third of 1942. This encouraged the carriers to come back into the market, with the above-noted result. Details are given in the "Equipment and Supplies" columns herein.

●

DIESEL PROGRESS: Comparing a 65-ton Diesel-electric locomotive of 1935 with its present counterpart, a speaker at an electrical engineers' meeting, reported elsewhere in these pages, drew attention to a decrease of 65 per cent in the cost of the power plant, with an increase of 19 per cent in its horsepower at the wheels. The total locomotive cost was reduced 26 per cent by the economy effected in the power plant.

●

HIGHWAY USERS ARE RIGHT: This reporter never foresaw that the day would come when he would find anything to agree with in recommendations of the National Highway Users Conference, but the unexpected has happened. The road users' outfit has urged that "the Director of the Office of Defense Transportation immediately be made a member of the War Production Board, in order to make possible at all times adequate presentation of transportation problems as they relate to the parallel problems of production." In this paper, January 17, page 201, exactly the same recommendation was made, and for the same reason cited by the Highway Conference.

●

HOW TO DEPRECIATE: Compulsory depreciation charges on fixed property have been postponed till next year but, meantime, the I. C. C. has issued optional rules for such accounting by those carriers which want to use them. Chief feature of the rules is that property is to be grouped—there is to be no depreciating one structure and not another of the same category. Rates to be used are to be based on an historical study, and until such rates are computed the carriers are to be assigned temporary rates by the Valuation Bureau. Looks as though quite a few roads might take this option—no use overstating earnings at a time when material scarcity does not allow replacements and maintenance to a degree commensurate with traffic.

TRANSPORT "FALLACIES": Most people believe three things about transportation which aren't true, according to Chairman Smith of the Transport Study Board, in a speech reported elsewhere herein. These errors are as follows: (1) that transportation is going to continue in the forms we know best; (2) that present prosperity has solved all transport problems; and (3) that changes in traffic which the war has brought are temporary.

●

TRANSPORT TRUTHS: Opposing the foregoing "fallacies," Dr. Smith says regarding (1) that people look on air transportation and pipelines as "adjuncts" to railroads, motor carriers and waterways—whereas there are changes going on that are going to put these agencies in a much bigger place. On (2) he says that, not only will present prosperity not solve any transportation problems but, in the end, it may make them tougher to crack than ever. As to (3), he contends that present shifts in production and traffic are not temporary but that the country's traffic and production map is being permanently altered and the transportation map will have to be changed to conform to it.

●

ICC ISSUES CAR ORDERS: Multiple cars for single shipments are "out the window" after February 13 in a modification of Classification Rules 24 and 34 decreed by the Commission. After February 20 re-consignment of perishables will be limited to three enroute with one change of consignee permitted at destination. On February 3 carriers serving New England ports were authorized to unload on the ground export shipments received there for which ship space was not immediately available.

●

STEEL ALLOTMENT: Copper—2250 tons—and steel—about 900,000 tons—needed for track and structures maintenance in the first quarter, have been allocated to the railroads by the War Production Board. But these allotments mustn't interfere with shell production, or they'll be proportionately reduced. Of the steel apportionment 538,000 tons is in rail and 294,000 tons in track fastenings. If called upon to do so, the railroads must turn in one ton of relay rail for every three of new rail they get.

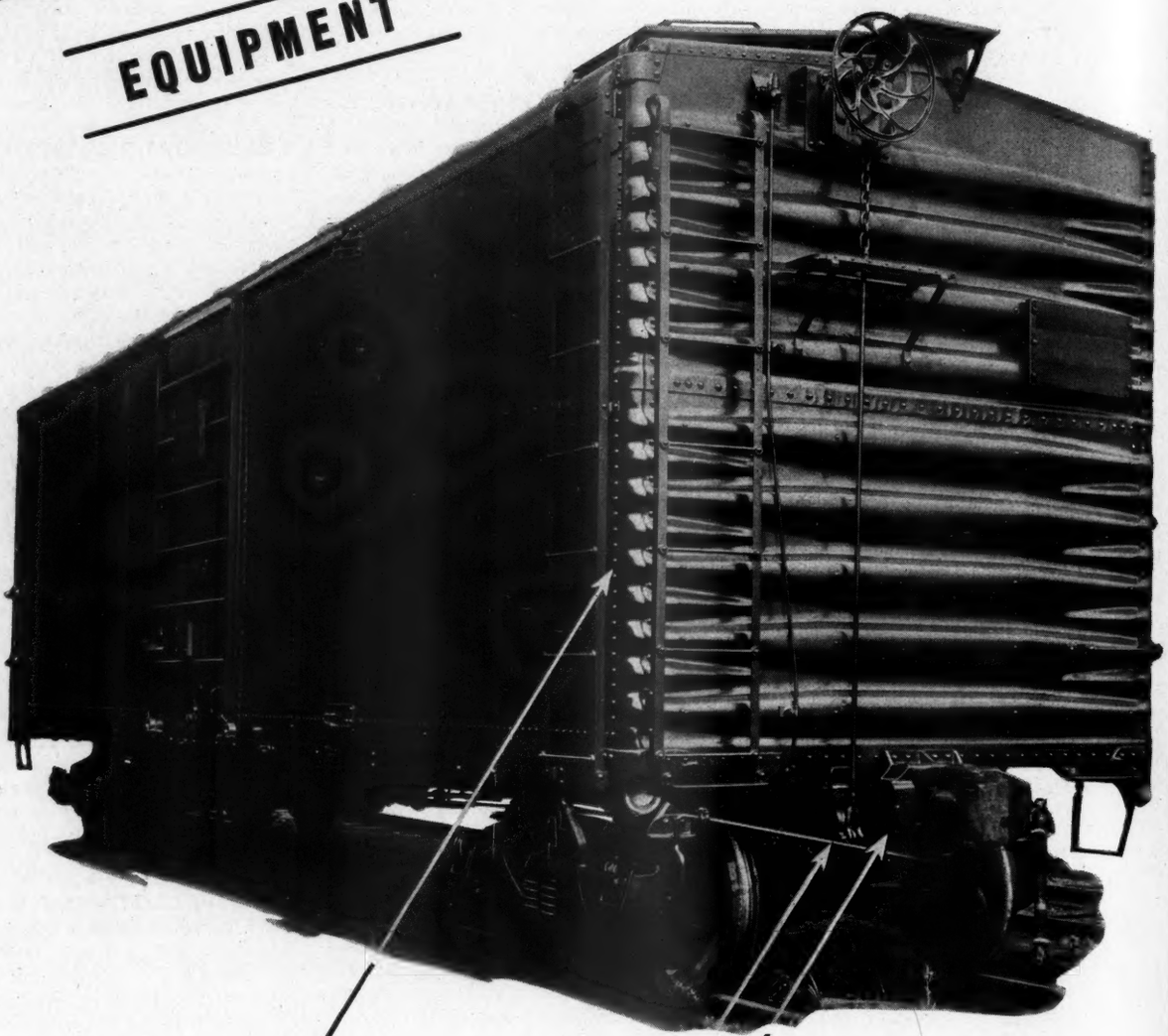
●

TAKES A BUST AT TRUCKS: The anti-trust section of the Justice Department is out after a group of Western truckers which have formed a combine called "Freightways," through which, it is alleged, they have succeeded in reducing competition among themselves.

●

WATERWAY PORK: To shake off critics of the billion dollar Waterway Bill, the Pork Barrel Committee has thrown out a sop that no appropriations be authorized under it during the war until they have been certified as "defense projects" by some appropriate agency and the President. Experience has amply demonstrated just how much of a "safeguard" this provision would turn out to be.

STANDARD RAILWAY EQUIPMENT



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RAILWAY AGE

How to Defeat Socialization of Transportation and Industry

Not all railroad men and shippers appear yet to realize fully how fortunate the transportation community is in the type of wartime control which has been established for it under the direction of Joseph B. Eastman. We were told the other day of a minor incident which illustrated several things. The traffic manager of an industrial company recommended to its president that its branch managers be ordered to disregard the "free time" allowed, and load and unload all freight cars as expeditiously as practicable. The president replied that he didn't see why his company should incur trouble and expense in speeding up the loading and unloading of cars when a certain railroad was unnecessarily delaying switching them.

Obviously, two parties were in the wrong. The president of the industrial company was justified in his criticism of the railroad; but, regardless of that, it was plainly his duty to industry as a whole and to the nation to have cars unloaded and loaded as promptly as practicable at his plants. Also, whether the shipper did this or not, it was the duty of the railroad to switch the cars as promptly as practicable. Neither would be in any position to criticize the other until he had done his own duty; and when both had done their duty there wouldn't be anything to criticize. Transportation can be made efficient and adequate enough for both civilian and war purposes only by all who can contribute anything toward this end contributing all they can toward it.

How to Kill Off Private Operation

The future of all private enterprise in this country is now at stake. Its future can be made what nobody in private business wants it to be by those in different industries failing to do their duty and then indulging publicly in mutual recriminations—as they did during World War I—with the result of pushing the railroads into government operation. The future of private enterprise can be helped to be what everybody in private business does want it to be by all in different industries doing their own duty and refraining from public criticism of one another. The railroads are a great private enterprise; and if they should pass into the hands of the government it would be just too bad for other forms of private enterprise. Whether the railways will be able to continue meeting all demands upon them probably will be principally determined by the way in which they, and the shippers and receivers of freight, handle freight cars.

The railways made an almost perfect record in rendering freight service last year; and their most significant achievement last year was that of carrying 47 billion 734 million tons one mile in October, while maintaining an average surplus of over 40,000 cars. This exceeded by 6 per cent the best monthly record (in October, 1928) made in any previous year, although the number of railroad-owned freight cars available was about 600,000, or 36 per cent, less. The following figures show the increases in efficiency by which this achievement was accomplished: Tons per loaded car, October, 1928, 27.0; October, 1941, 29.2; increase, 8 per cent. Miles per car per day, October, 1928, 36.2; October, 1941, 45.1; increase, 25 per cent. Ton-miles per car per day, October, 1928, 627; October, 1941, 852; increase in efficiency of car utilization, 36 per cent. The increase in efficiency shown was entirely the result of **voluntary co-operation** between the railroads themselves, and between them and the shippers, and to no pressure or coercion whatever from government.

The Railroads Have Been Given Their Chance

By the policy adopted by the government in creating the Office of Defense Transportation, and by the policies thus far announced by Director of Defense Transportation Eastman, the transportation industry and its customers, and especially the railroads and their customers, have been given the opportunity and organization to continue their voluntary co-operation, and thus on their own initiative and in their own way to cause maximum use of the nation's transportation facilities for the duration of the nation's war effort. Undoubt-

edly, the efficiency of use of these facilities will need to be constantly increased; but, undoubtedly it also can be increased enough if full advantage of the opportunity for continued voluntary constructive co-operation is taken by all agencies of transportation and their customers.

There has been no "regimentation" nor coercion as yet—and there is little likelihood that these may be resorted to, unless the industry and its customers demonstrate their unwillingness or inability to subordinate immediate and selfish objectives to the preponderant necessity of efficient service to the nation.

Lack of full appreciation of this continuing freedom and the responsibility which such freedom puts upon those who enjoy it to use it wisely in the national interest, is certain to result in coercion—and anybody who knows anything about transportation is fully aware of the likelihood that highly centralized control, if once established, may not be so easy to slough off when the war is over. No other industry closely connected with the war effort has been given similar control of its own operations and its own destiny. All the rest of them are tightly regimented, with individual companies and managements restricted in their prerogatives to the point where all they do is carry out the detailed instructions of their Washington masters, pay the bills and keep the books.

10,000 Capable Planners Better Than a Handful

When it comes to "planning" for a great definite goal, a thousand or ten thousand good co-operating minds are always more effective than fifty or a hundred. The difficulty is to get the larger number to agree together on what they are planning for. This difficulty is less serious in transportation—and particularly in the railroad branch of transportation—than in almost any other part of industry, because for so many years the railroads among themselves, and the railroads and the shippers with each other, have steadily developed their co-operative machinery for dealing effectively with mutual problems. The collaboration which exists between the Interstate Commerce Commission and the enterprises which come under its regulation stands out in strong contrast to the animosity and distrust which now separates many regulatory bodies from the areas of industry which they supervise. Such considerations were doubtless what impelled the government, in devising a plan for wartime control of transportation, to rely much more fully on voluntary collaboration within the industry and between the industry and its customers than was considered possible in the case of other large industries closely associated with the war effort.

Not only in the order which created the Office of Defense Transportation, but in reiterated statements of Director Eastman, the ODT policy has been made clear, viz., unlimited opportunity for transportation and its customers to govern their own affairs if they are willing to do so more in the national interest than in their own, but a determination to use direct governmental action whenever carrier or shipper collaboration fails to produce results.

Change from ODT Won't Be for the Better

Since no nation can survive which tolerates behavior at conflict with its effort to wage war successfully, it is not conceivable that the government should accord to the transportation community any more freedom than it has done—that is, freedom to do its best for the national defense. It is, unfortunately, easy to foresee how far the government, as at present constituted, might, with or without cause, elect to curtail that freedom. It follows, therefore, that **the present arrangement for the conduct of wartime transportation is the most favorable, from the point of view of private operation and management, that can possibly be forthcoming. Any change must inevitably be for the worse**—more and more government control and less and less opportunity for the exercise of the normal functions of management and ownership. It should not require deep patriotism or a lively sense of civic responsibility, therefore, on the part of the transportation community to bring out its fullest co-operation with Mr. Eastman and his organization. Just intelligent and reasonably foresighted self-interest should be motive enough.

Under these circumstances, the ill-natured criticism of the personnel of the Office of Defense Transportation which has appeared in the "Traffic World" cannot be considered otherwise than as a disservice to continuance of increased efficiency and freedom and private enterprise in transportation. "A refuge for has-beens and neverwassers in search of jobs," are the elegant words with which that publication has characterized a staff, of whom Mr. Eastman has truly said, "Many of them have come to me at very considerable personal sacrifice, and only because of their desire to contribute to the war effort." We know personally quite a number of the ODT staff, and of the extreme effort Mr. Eastman put forth to secure the services of the best men available. In view of the facts, that men already employed in important positions by transportation companies could logically take the stand that the nation needed their services as much in these positions as on Mr. Eastman's staff; that Mr. Eastman had definitely limited what he intended his staff to do unless unforeseeable emergencies developed; and that Mr. Eastman could pay a maximum salary of only $8,000, we believe that Mr. Eastman established as good an organization for the purposes stated by him as anybody could reasonably have expected. The maximum salary mentioned, incidentally, was not set by Mr. Eastman, but by other government officials, who, perhaps, don't care very much whether private operation of transportation under the ODT plan is a success or not.

Fault-finding with the ODT organization on no grounds more apparent than that one or two of them may have, at one time, borne higher titles than they

now hold, can serve only one cause—that of the avid left-wing New Dealers who want government-ownership of transportation as an integral part of their scheme for a post-war "planned," i. e., sovietized, society. Nothing could please these plotters so much as failure of the ODT plan for continued private operation of transportation—and heaping unwarranted calumny on ODT personnel can serve only such an end.

Socialists Are Planning to Pearl-Harbor Free Enterprise

Hundreds of these "planners" are on the federal payroll—not only in making the blueprints for the communistic society which they have in mind, but in taking the necessary preliminary political steps to that end—the whole scheme being supported by a continued barrage of propaganda, by speeches, by printed "reports" and by thinly-disguised radio "forums." The huge government investment in defense plants, most of which will have peacetime uses, gives these socializers something definite and tangible to build upon. There was only one such government development of any consequence during the last war—the Muscle Shoals dam—and that grew into the TVA. At the end of this war, as one great industrial research director has predicted, "we shall have 10,000 TVA's." The wartime government control of large industries will give these "planners" the opportunity to say, when the war is over, "Why should not the government continue to operate these plants, regardless of profit or loss, in order to provide employment?"

Set over against this area of industry, in which the nazifying planners appear to be making such progress, is transportation. In this industry—thanks to the degree to which it has learned to co-operate within itself and with its customers, including government departments, since the last war, and thanks to the statesmanship of the man appointed to direct the Office of Defense Transportation—socialization is more remote from transportation than from most other large industries. It is much farther away than it was at the time of the last war. Considering the splendid service which the defense and war effort has received from the transportation industry thus far, largely due to the co-operation of its customers, it seems hardly likely that a strong political demand will be made for changing the *status quo,* unless the *status quo* fails to deliver the goods. And such failure is not possible, provided the priorities authorities meet the reasonable demands of the industry for materials, and provided all agencies of transportation and their customers use the means they have available, including the facilities of the ODT, to provide genuine co-ordination and elimination of waste in transportation.

By making the ODT arrangement a success, the transportation industry and its customers will not only keep that industry out of the hands of the government, but will succeed in demonstrating to the nation that the voluntary co-operative "planning" of thousands of competent business individualists produces better results than centralized direction of economic life by a bureaucratic government brain trust.

Signals During Black-Outs

Viewed from enemy aircraft overhead, the lights in automatic block signals along a railroad might provide excellent navigation lights from points along the coast to industrial centers. On the other hand, if railroad traffic is to be handled efficiently, trains must be kept moving with safety at approximately normal speeds, and the signal lamps must, therefore, be illuminated. The solution of the problem is to so control the lamps and the beam that they will not be visible to aircraft at the elevations at which they normally operate, and at the same time present aspects which will be adequate for the operation of trains. The present emergency calls for practical methods which can be applied quickly with a minimum of materials.

Obviously the most effective means of preventing a signal lamp from being seen is to extinguish it, except when needed for train operation. With electric lamps, approach controls, actuated by trains on track circuits in approach to each signal, can be provided to effect this result. Although many roads have preferred to burn the lamps continuously to give information to track forces and others concerning the approach of trains, the emergency suggests that approach lighting may be placed in effect, especially at locations where a few changes in connections would accomplish the desired result. At interlockings where the lamps are all fed from one circuit, a knife switch could be installed to enable the leverman to extinguish the signal lamps when not needed.

Regardless of whether the lamps are to burn continuously or only during the approach of trains, every effort should be made to render the lamps invisible from enemy aircraft at elevations of 5,000 ft. or more. One measure contributing to this result is to prevent light from leaving the lamp at an upward angle. To accomplish this result, one road on the west coast has applied special hoods, about 24 in. long to its signals. Another means is to tilt a light signal head, or the lamp on a semaphore, so that the beam is directed at an angle slightly below horizontal; this practice, however, reduces the range at which the aspect can be seen from an approaching locomotive.

Many developments have been made in recent years to increase the range of signals, and the railroads have purposely located signals so that they can be seen a maximum distance when approaching. However, with three-aspect signaling, and the signals spaced full train stopping distance, an engineman always has an Approach aspect and track length in which to stop short of a signal indicating that he must stop. An ex-

ception would be an instance in which a switch might be thrown in a block to set a signal at the most restrictive aspect after a train has passed the signal in approach to the signal for that block. This leads to the thought that long-range aspects are not absolutely necessary except for the red aspect of signals for blocks in which switches are located less than emergency braking distance from the signal. From an engineman's standpoint, it is desirable that he see the aspect as soon as he can see the signal, but for the duration of the present emergency, no safety would be sacrificed by reducing the range on many signals.

In order to provide adequate range in strong sunlight, light signals are designed to display much more intensity than is required during darkness, leading to the objection in some instances that the lights are so strong at night that they blind the enginemen. At some interlockings where the lamps are all fed from one cir-

Dividing Traffic in the National Interest

In his penetrating analysis of the radically-changed prospects and problems of the railroads, presented recently to the New England Railroad Club (*Railway Age*, January 17, 1942, page 224), Professor Kent Healy of Yale said:

"The usual, and normally sound, competitive attitude toward highway and water transportation agencies may prove treacherous. . . . Certainly the opportunities to regain traffic from competitors will be especially tempting, with restriction of the latter's operation by priorities or commandeering of their facilities.

"With the possible reduction of private automobile traffic, the expected return to the rails from rubber may have a pleasing ring in the railroader's ears, but it is almost a certainty that the railroads have not got the facilities to handle very much of such diverted traffic without affecting their ability to do a top notch defense job. Should any great quantity of the short or medium haul, small lot, truck traffic be similarly returned to the rails, the freight houses, terminal tracks, and way freights could be quickly swamped.

"By way of detailed illustration I might point to the old peddler way freight which stopped at stations every few miles to handle the great volume of l.c.l. freight then carried by the railroads. Today many of the stations are closed, in some cases the railroad lines have been abandoned, and certainly the overall improved performance of numerous divisions can be partially attributed to the removal of those way freights. Any considerable resumption of these trains would require crews, motive power, track capacity and station facilities which the railroads do not possess and cannot get.

"Thus the railroads will have to recognize and make it clear to others that their facilities and operations have been modified in the past ten or fifteen years in light of the new competitive allocations of traffic and that resumption of certain of the older operations is impossible in view of the scarcity of materials and man power at the present time. From the long run point of view, too, the taking over of much of the lost traffic would have its dangers. With post-war lifting of such temporary bars as affect competitors in war time, the railroads would have spent their effort in channels which to a large extent would only have to be rendered useless again.

"All this adds up to the fact that the competitive attitude toward highway and water transportation should be kept within definite bounds. While such a policy of playing the cards closely is bound to be distasteful, it represents a fundamental recognition of the relative importance of objectives, defense versus increased markets. The choice between these two is obvious as a general proposition and should not be allowed to be any the less obvious because it may hurt when the choice is made on the home field."

The right answer to the question Mr. Healy raises must be given, and it must be given without delay, or effective transportation for the war effort will suffer great harm—to say nothing of serious post-war consequences. However, it does not seem to your observer that Mr. Healy distinguished as clearly as he might have between *two radically different categories of competitive traffic,* viz., (1) that to which the railroads are economically suited and (2) that to which they are not suited.

Mr. Healy properly warns the carriers away from soliciting competitive freight which would force them to re-open abandoned stations; restore wasteful peddler trains. Quite apart from adding to such anachronistic facilities, the railroads might better seek to be relieved of those which they still maintain. There is a more important use for locomotives, cars and skilled labor today than to fritter them away in "retail" transportation service which trucks can do with a fraction of the man-hours and of capital tied up in equipment.

But how about truck-hauls of 500 or 1,000 miles, especially those parallel to a normal empty movement of cars by the railroads? It is in the short-run as well as the long-run interest of the railroads that they win such traffic from the trucks, if they can. More important than that, *the shifting of such long-haul traffic from highway to rail is imperatively necessary if the over-all transportation plant of the nation is to serve the war effort with the utmost efficiency.*

The railroads, as Mr. Healy advises, should not yield to the temptation to take over from the trucks, temporarily, short-haul tonnage which is museum stuff as far as rail transportation is concerned. But neither should they—since efficient use of the transportation machine is so important to the national defense—*neglect* to try, at least, to attract to the rails such traffic as *economically belongs on steel.* There is nothing inimical to truck transportation in such a move by the railroads. These vehicles will be fully occupied if they, as well as the railroads, stick to the kind of service which they are economically suited to handle.

To have these two essential forms of transportation wastefully trying to do each other's proper kind of work is a luxury which the country cannot afford in a period when the total demand for transportation is likely to exceed the total supply. This point of view, incidentally, appears *not* to be shared by the unions. The paper "Labor," to cite but one instance, in its issue of January 13, page 3, stated that "government orders shutting down automobile production and rationing tires provided railroad labor this week with a powerful new argument against abandonment by carriers of less profitable branch lines or curtailment of passenger service." The desire here, patently, is to require the railroads to continue to devote scarce equipment and labor to jobs they cannot do as efficiently as trucks and buses can.

cuit originating at the tower, arrangements have been made for the leverman to operate a "dimmer" switch which reduces the intensity of the lamps during the hours of darkness. This idea of reducing the lamp voltage at night can be applied on some automatic signal territories where an a-c. power line is used to feed batteries on either the a-c. floating storage or the a-c. primary system, and with the signal lamps normally fed through transformers from the a-c. supply. A sun relay can be provided at the a-c. feed station to control an arrangement which, during hours of darkness, would reduce the distribution voltage for example from 440 to 380, and correspondingly would reduce the lamp voltage from a normal of 10 volts to a night voltage of 7.5 volts.

In consideration of the protection afforded by automatic signals, numerous roads do not use switch lamps on hand-throw switches located within 500 ft. of a signal, and some roads omit the lamps on all switches in signal territory, especially on double track. If the switch lamps cannot be eliminated, the use of hoods should be investigated. On the Southern Pacific hoods 4¾ in. long are being installed on switch lamps, and in yards where trainmen might be injured by metal hoods, flexible hoods made of sections of automobile tires with the tread removed, have been installed.

Improved Appearance With Actual Economy

While here and there, railway station and terminal buildings are among the most attractive structures in the towns and cities which they serve, it is equally true that in many other communities these buildings are among the least attractive. In fact, railway structures as a class have been held up in some quarters as notoriously unattractive, and, while any such general charge may well be challenged, it is a fact that there is plenty of evidence tending to support it.

Railway managements may well deplore the existence of any such public feeling toward their properties, especially at a time when they are making such great efforts to cultivate public favor and good will, and have been building ultra-modern passenger train equipment, with no limitations on colors and features of design, to accomplish this end. But they must accept their share of responsibility for the fact that there is a basis for such criticism of their structures generally.

Railway engineers and architects may make no claim to special artistic capabilities, and it is possible that some of them, inherently, or through long contact with the highly practical requirements of railroad construction, have little artistic sense. However, to a far greater extent than is recognized, much of the instinctive desire of these men to build attractively, as well as soundly, has long since been killed by the unwitting criticism of superior officers, to whom improved appearance has invariably meant added costs, if not money wasted, and who have been unable to comprehend that this is not necessarily so.

To many who have been prone to such thinking, a colorful floor or wall has been a "red flag," without consideration of the fact that it might be of more enduring materials and, in its very appearance, induce less abuse by the public and thus require less maintenance. To others, the attractiveness of simplicity in lines and ornamentation, employing modern materials, has been the basis of criticism, without consideration of the marked economies that might be involved in both construction and maintenance. And to many of these and others, a fluted concrete bridge pier or abutment, for example, to secure a streamlined effect, has been looked upon as evidence of extravagance, with little realization that these modern and attractive touches are possible by simply nailing a few half-round or triangular strips to the faces of the forms, at little or no added cost. Faced with this situation, it is an open secret among railway bridge and building men that many of them have purposely avoided making structures too attractive to avoid criticism that they have been extravagant.

Fortunately, due to many influences from within and without, these lines of thought are changing. With modern building materials and furnishings, it has been demonstrated conclusively that pleasing effects in design and color can be built into structures without sacrificing their utilitarian value, often at less expense than former types of construction, and with the prospects of lower maintenance costs. Thus, today, as railway engineers and architects are being given a freer hand, they are demonstrating repeatedly in station modernization projects—projects that are being acclaimed by the public—that improved appearance can be gained without disproportionate costs, and, more frequently than not, with actual economy.

Post-War Planning

"In a study prepared for the National Resources Planning Board, Professor Alvin H. Hansen disputes the widespread theory that a post-war depression is inevitable. We must have, he says, a positive program of post-war economic expansion and full employment boldly conceived and vigorously pursued. He believes that this will involve retaining much of the heavy taxation and large-scale government spending of wartimes. . . .

"To place our main reliance upon a scheme of perpetual government borrowing and spending to circulate purchasing power in our post-war system implies that enterprise will be dead, or nearly so, and we must have a mechanical heart to keep the economic bloodstream flowing. Such a solution to our post-war problems would be no solution at all. It would mean that we were merely resigning ourselves to our own brand of economic totalitarianism after beating back the Nazi brand. We need no more lack courage and faith in our ability to solve the post-war problems than we should lack determination in our efforts to win the war. It is all one fight. Our wartime policies constitute the most important kind of post-war planning."

From the New York Times

Railway Materials a Big Factor in Carloadings

Revenue movement of railway materials, added to non-revenue, indicates that 13 per cent of total traffic is of railroad origin

TIGHTNESS in the freight car supply, and the difficulty of getting materials with which to build new cars in either commercial or railroad shops as fast as they are needed, have directed more attention to non-revenue freight than it has received for many years. Non-revenue freight consists, of course, almost entirely of railway materials and affects the car supply more largely than is commonly realized. It was no accident that the railroads, as well as industry, were urged to store fuel last fall in anticipation of record freight loadings and that railroad supply and other forces have been called upon to use cars sparingly and as efficiently as possible. The necessity for this is plainly to be seen in the records of freight cars used and freight tonnage handled in them.

Company Material 8.1 Per Cent of All Freight

During 1940, Class I line haul railroads carried 2,025,291,000 tons of freight, of which 174,096,000 tons, or 8.6 per cent, was non-revenue freight. In the same year, the railroads carried 392,696,966,000 ton-miles, of which 31,933,178,000 ton-miles, or 8.1 per cent was non-revenue.

Non-revenue freight consists of the fuel, rails, ties and other materials which each railroad purchases and moves over its own lines; shipments of materials to and from shops and material yards for railroad use; shipments of earth, cinders, sand and gravel for building and maintaining tracks, together with the on-line rail movements of old and discarded materials—in short, all station-to-station shipments of company material on the home line. Thus, 8.6 per cent of the tons and 8.1 per cent of the ton-miles of freight carried by the railroads in 1940 were materials carried on their own lines for their own use.

In addition, the railroads purchase materials and supplies which do not originate on their own lines, but must be shipped over one or more other railroads as revenue freight. The proportion of this material differs on different railroads and no official reports of this tonnage

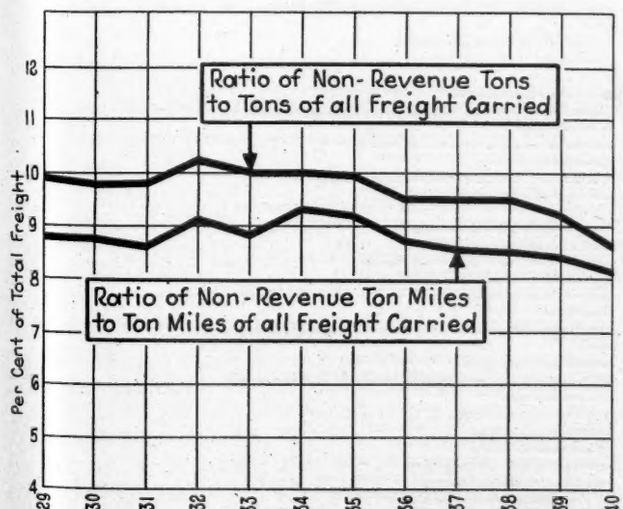
Tons and Ton Miles of Non-Revenue Freight—Year 1940

	Revenue and Non-Revenue Tons	Non-Revenue Tons	Per Cent of Total		Revenue and Non-Revenue Ton-Miles (000)	Non-Revenue Ton-Miles (000)	Per Cent
			All Items	Misc. and-Re-handling*			
A. C. & Y.	2,695,226	74,321	2.8	0	180,724	3,298	1.8
Alton	7,889,473	687,642	8.7	1.2	1,270,178	64,872	5.0
Ann Arbor	2,568,719	188,527	7.3	1.5	499,962	33,421	6.5
A. T. & S. F.	37,453,620	7,423,135	19.8	12.0	14,481,359	1,398,833	9.6
A. & W. P. Lines	6,458,471	233,993	3.6	0	583,671	18,287	3.1
A. B. & C.	1,923,733	225,318	11.8	3.1	395,934	45,081	11.4
A. C. L.	22,351,897	3,589,313	16.0	8.8	3,575,198	493,492	13.8
B. & O.	92,988,516	6,939,804	7.5	1.3	18,684,798	1,116,674	6.0
Bang. & Aroos.	1,987,570	120,077	6.0	1.7	237,539	12,326	5.2
Bess. & L. E.	23,072,427	412,227	1.8	0.6	2,484,170	24,037	1.0
Bos. & Me.	17,938,443	1,666,925	9.3	4.2	2,525,377	143,142	5.7
Burl.-Rock Is.	560,741	10,980	2.0	0	79,362	1,019	1.2
Camb. & Ind.	4,134,253	26,177	0.6	0	73,675	327	0.4
C. N. in New Eng.	1,249,715	156,342	12.5	..	135,108	21,074	15.6
C. P. in Me.	2,141,838	138,135	6.5	..	376,713	15,573	4.2
C. P. in Vt.	1,569,311	53,001	3.4	..	106,018	1,583	1.4
Cent. of Ga.	8,522,510	946,121	11.0	4.0	1,546,938	162,443	10.5
Cent. of N. J.	29,965,874	1,167,599	3.9	1.2	2,196,643	91,413	4.1
Cent. Vt.	3,348,413	178,632	5.3	0.5	573,941	9,964	1.7
Char. & W. C.	2,533,180	190,007	13.3	4.6	280,664	12,475	4.5
C. & O.	78,963,180	4,151,802	5.2	1.6	21,305,202	714,701	3.3
C. & E. I.	8,391,081	894,763	10.6	4.0	1,388,158	69,393	5.0
C. & I. M.	7,275,817	329	..	..	458,446	11,612	2.5
C. & N. W.	44,065,166	3,963,036	9.1	1.5	7,667,931	1,191,663	10.6
C. B. & Q.	35,963,508	4,949,494	13.7	4.6	10,320,364	1,347,941	12.1
C. G. W.	7,181,469	1,111,573	15.5	6.6	1,987,227	117,963	5.9
C. I. & L.	5,653,577	389,234	6.9	..	934,086	44,308	4.7
C. M. St. P. & P.	39,950,290	4,629,323	11.7	..	11,566,258	1,469,061	12.7
C. R. I. & P.	27,784,999	3,457,479	12.5	3.3	7,703,986	695,490	9.0
C. St. P. M. & O.	9,281,424	713,385	7.7	..	1,517,382	84,886	5.5
Clinch.	6,831,158	285,620	4.2	0.7	1,085,362	20,483	1.9
Colo. & Sou.	4,021,922	298,134	7.5	7.3	675,451	37,797	5.6
Colo. & Wyo.	1,708,340	5,705	.3	..	13,355	189	1.4
Col. & Green.	858,639	102,581	11.9	None	66,938	5,871	9.0
Del. & Hud.	20,740,544	1,060,447	5.1	1.4	3,036,645	145,343	4.8
Del., Lack. & W.	24,566,341	2,077,663	8.5	1.5	3,635,171	269,603	7.5
D. & R. G. W.	10,854,195	1,492,185	13.7	4.2	.....	.....	..
Den. & Salt Lake	1,137,359	138,712	12.0	..	180,148	13,986	7.8
Det. & Mack.	766,811	26,725	3.5	None	52,948	2,040	3.9
D. & T. S. L.	6,990,457	57,110	0.8	None	339,516	608	0.2
D. T. & I.	5,930,921	227,717	3.8	1.6	607,060	40,531	6.7
D. M. & I. R.	32,885,680	455,396	1.4	0.6	2,477,952	30,133	1.2
D. S. S. & A.	2,261,384	116,478	5.1	1.1	198,200	6,760	3.4
D. W. & Pac.	1,108,587	53,767	4.8	..	164,629	2,874	1.7
E. J. & E.	31,297,688	568,207	1.8	0.4	1,229,193	67,004	5.4
Erie	39,189,965	3,342,384	8.6	..	8,647,007	590,694	6.8
F. E. C.	2,042,177	295,079	14.4	5.7	437,117	32,601	7.5
F. W. & D. C.	2,678,551	297,361	11.0	4.5	519,742	50,662	9.8
Georgia & Fla.	912,361	37,530	4.1	..	96,381	6,600	6.8
G. T. W.	14,392,939	1,255,019	8.7	4.1	1,981,362	104,749	5.3

	Revenue and Non-Revenue Tons	Non-Revenue Tons	Per cent of Total		Revenue and Non-Revenue Ton-Miles (000)	Non-Revenue Ton-Miles (000)	Per Cent
			All Items	Misc. and Re-handling*			
G. N.	43,597,473	3,549,862	8.2	3.8	10,986,237	872,295	8.0
Gr. Bay & Westn.	1,247,548	36,017	2.9	None	143,762	3,560	2.5
G. M. & O.	9,196,188	1,111,131	12.1	1.2	2,122,684	201,779	9.5
I. C. Lines	54,458,537	6,324,270	11.5	3.2	12,455,081	1,434,201	11.4
Ill. Term.	5,566,912	137,122	2.5	..	314,205	6,861	2.2
K. C. S.	6,384,494	506,056	8.0	3.1	1,400,983	55,941	4.0
K. Okla. & Gulf	1,708,714	100,515	5.9	..	196,578	11,181	6.0
Lake Sup. & Ish.	5,936,482	11,989	0.4	..	100,453	366	0.4
L. & H. R.	3,266,395	29,100	9.0	..	224,714	1,700	0.8
L. & N. E.	7,950,054	129,117	1.6	0.5	362,020	3,893	1.1
Lehigh Valley	24,999,151	1,530,998	6.1	1.3	4,247,752	118,878	2.8
La. & Ark.	6,176,906	543,521	8.8	3.1	821,355	43,466	5.2
La. & Nash.	54,627,146	5,197,995	9.5	3.0	11,655,294	670,303	6.8
Me. Cent.	5,819,588	265,742	4.5	0.3	658,274	23,559	3.6
Mid. Valley	1,333,016	72,939	5.5	..	103,884	5,376	5.2
M. & St. L.	5,233,361	328,061	6.3	None	968,248	86,812	9.0
Soo	13,994,745	1,383,501	10.0	4.2	2,966,240	224,308	7.6
Miss. Cent.	608,397	45,053	7.5	..	51,765	2,076	4.0
Mo. & Ark.	718,414	73,390	10.2	0.4	120,615	8,900	7.5
M.-K.-T.	9,149,234	994,884	10.8	..	2,264,306	163,252	7.2
M. P. System	51,506,492	5,905,736	11.5	5.1	11,321,809	1,267,748	11.2
Monongahela	13,129,138	81,181	0.6	None	502,318	2,412	0.5
Montour	5,611,423	50,777	0.9	None	140,326	819	0.6
Nash. C. & St. L.	6,980,851	760,766	10.9	2.9	1,207,027	88,728	7.4
Nev. Nor.	469,866	30,852	6.7	None	46,021	3,363	7.2
N. Y. C.	150,228,434	13,679,239	9.0	..	32,493,545	3,185,106	9.8
N. Y. C. & St. L.	26,179,933	2,592,297	9.9	4.5	5,286,181	223,361	4.2
N. Y. N. H. & H.	27,780,515	1,726,029	6.2	1.2	3,215,058	223,401	6.9
N. Y. O. & W.	5,186,627	243,504	4.7	0.8	479,004	17,074	3.5
N. Y. S. & W.	3,764,785	72,673	2.0	..	84,574	954	1.1
Norf. & West.	59,562,248	3,500,475	5.9	1.9	6,015,730	532,746	3.3
Norf. & Sou.	2,658,949	144,449	5.5	1.0	375,396	16,707	4.5
Nor. Pac.	22,315,166	3,772,716	16.9	6.1	7,361,143	997,327	13.5
N. W. Pac	1,521,319	119,238	7.9	0.5	188,743	11,458	6.1
Okla. City	216,651	7,081	3.2	..	11,634	297	2.5
Penn. Lines	201,989,247	18,090,731	8.9	2.9	42,695,850	2,721,018	6.4
Pere Marquette	17,086,836	1,261,476	7.4	0.6	3,044,571	167,086	5.5
Pitts. & Shaw.	2,012,548	82,898	4.1	2.4	97,334	2,356	4.0
Pitts. & W. Va.	5,735,796	154,923	2.7	None	327,007	2,715	0.8
Pitts. Shaw. & N.	1,274,639	45,456	3.5	..	115,500	2,327	2.0
Reading	60,960,894	1,797,075	3.0	0.4	5,445,775	164,313	3.0
R. F. & P.	13,609,242	246,632	1.8	..	461,348	10,242	2.2
Rutland	1,666,181	185,565	11.1	4.3	207,656	19,528	9.5
St. L.-S. F.	20,749,567	2,849,843	13.7	8.1	4,608,486	638,684	13.7
St. L. S. W.	6,527,086	921,377	14.1	6.3	1,875,569	56,321	3.0
S. A. L.	21,658,287	2,641,579	12.2	6.3	4,035,541	626,631	15.4
Sou. Sys.	62,419,336	7,161,532	11.5	2.7	12,421,229	1,296,526	10.4
Sou. Pac.	42,526,413	5,732,650	13.4	8.0	14,728,832	1,094,669	7.4
Spok. Int.	777,471	27,924	3.6	..	62,984	2,936	4.6
S. P. & S.	5,227,207	341,412	6.5	..	958,592	35,362	3.7
Tenn. Cent.	1,988,814	167,459	8.4	2.3	203,878	8,557	4.2
T. & N. O.	15,067,924	1,793,227	12.0	..	4,210,136	316,083	7.5
T. & P.	9,344,112	888,809	9.5	3.2	2,129,400	182,438	8.5
Tex. Mex.	606,458	11,177	1.8	..	29,358	830	2.8
Tol. P. & W.	2,135,366	111,499	5.2	..	191,908	4,994	2.6
U. P.	34,746,485	7,457,169	21.5	5.9	16,518,419	2,458,026	14.8
Utah	943,999	29,622	3.1	..	82,811	1,023	1.2
Virginian	15,719,107	832,026	5.3	..	4,023,321	117,329	2.9
Wabash	19,987,510	2,339,875	11.6	3.5	4,672,681	331,190	7.1
West. Md.	18,831,389	895,985	4.7	4.7	2,278,247	108,443	4.7
West. Pac.	5,167,034	509,218	9.9	..	2,183,615	119,472	5.5
W. & L. E.	16,787,674	925,897	5.5	2.5	1,681,985	56,021	3.3
Pitts. & L. E.	33,629,374	652,224	1.9	..	1,930,803	32,970	1.7

* Estimated—Excludes purchases of fuel, rail, ties, lumber and ballast. No data where blank spaces occur.

are available. However, 69 per cent of the expenditures made by 100 railroads for materials, fuel and equipment in 1937 were distributed in states on the lines of these railroads and 31 per cent in states off-line. Off-line states got 65 per cent of the purchases from railroads in the New England region, 15 per cent from the Great Lakes region, 13 per cent from roads in the Central Eastern region, 21 per cent from the Southern roads, 45 per cent from the Northwestern and Central Western roads and 30 per cent from the railroads in the Southwestern region.



Year-to-Year Trends in the Percentage Relation of Non-Revenue Freight Carried by Class I Railroads to Total Revenue and Non-Revenue Freight of the Class I Railroads in Tons and Ton-Miles

From these figures, it is conservative to state that 30 per cent of the shipments for railroads were received from connections. Based on the total volume of non-revenue freight carried, it may thus be said that 75,000,000 tons of the freight reported as revenue freight and 15,000,000,000 of the ton-miles reported as revenue freight, in 1940, consisted of railway material which, when added to the non-revenue freight, increases the railroad-owned freight handled in 1940 to about 250,000,000 tons, or 12.4 per cent of the total tons carried, and to about 47,000,000,000 ton-miles, or 12.0 per cent of the total ton-miles carried.

Direct and Indirect Freight 13 Per Cent

But this is not all. Freight carried by the railroads also includes the railroad shipments of raw materials which are purchased by manufacturers to make the materials and equipment purchased by railroads. This ton-

nage excludes the fuel, ties and lumber purchased by the railroads, since such materials are received from original sources. On the other hand, as many as five tons of raw material are required to produce one ton of finished steel. Any estimate of the freight produced in this manner is highly speculative, but it is believed to be not less than 20,000,000 tons or the equivalent of about 4,000,000,000 ton-miles. These additions would bring the freight carried by the railroads for themselves or for the manufacture of railway material to at least 270,000,000 tons, or 13.3 per cent of the total tons carried, and to at least 51,000,000,000 ton-miles, or 13.0 per cent of the ton-miles of freight carried by the railroads in 1940.

Year to year variations of these figures should be proportionate to the non-revenue figures. In 1939, non-revenue freight carried by the railroads amounted to 165,882,000 tons, which was 9.2 per cent of the total,

Non-Revenue Freight Carried by Class I Line Haul Railroads

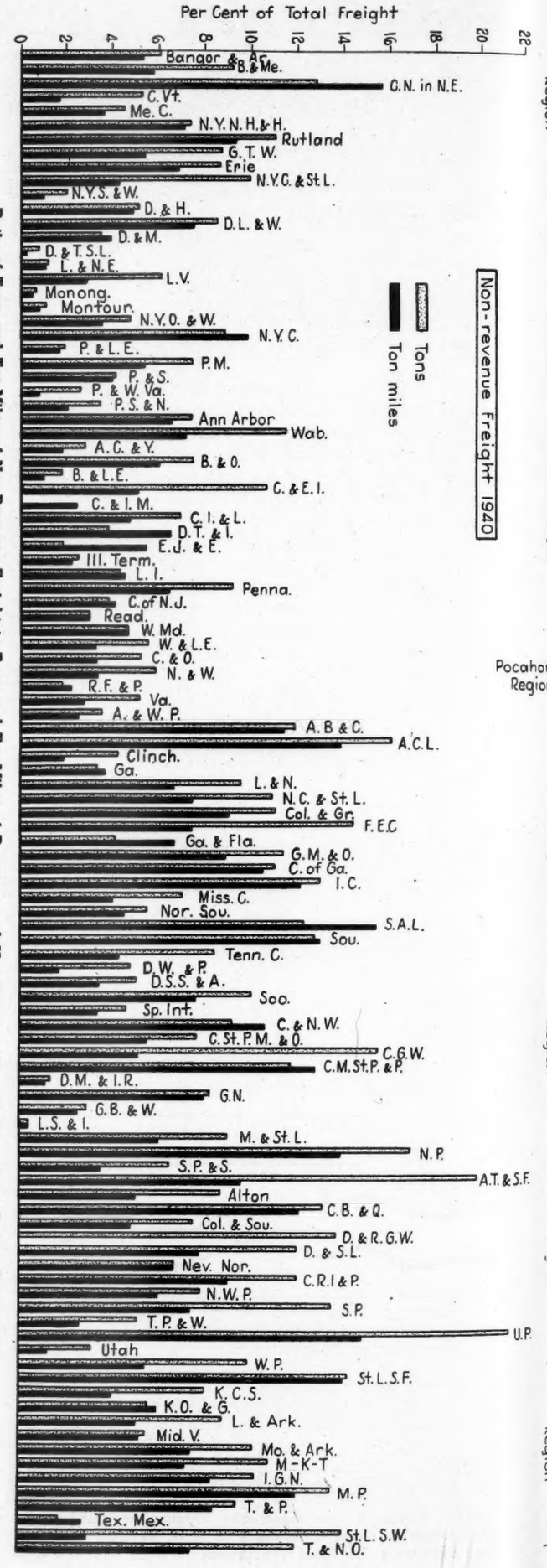
	Revenue and Non-Revenue Tons (000)	Non-Revenue Tons (000)	Per Cent Non-Revenue	Revenue and Non-Revenue Ton-Miles (000)	Non-Revenue Ton-Miles (000)	Per Cent Non-Revenue
1940*	2,025,291	174,096	8.6	392,696,966	31,933,178	8.1
1939	1,802,097	165,882	9.2	363,875,760	30,437,380	8.4
1938	1,545,939	146,680	9.5	316,909,802	26,825,431	8.5
1937	2,015,867	190,525	9.5	394,571,643	33,951,374	8.6
1936	1,891,949	178,974	9.5	371,674,474	32,428,648	8.7
1935	1,584,192	157,150	9.9	310,484,480	28,447,548	9.2
1934	1,522,601	152,868	10.0	295,974,882	27,264,375	9.3
1933	1,396,757	137,934	10.0	273,153,041	23,929,861	8.8
1932	1,301,432	133,143	10.2	257,276,065	23,299,056	9.1
1931	1,779,146	174,112	9.8	338,218,324	28,993,445	8.6
1930	2,288,802	225,724	9.8	420,015,565	36,565,977	8.7
1929	2,719,974	268,373	9.9	489,887,393	42,565,832	8.7

* Subject to Revision.

and to 30,473,300,000 ton-miles, or 8.4 per cent of the total. In 1929, non-revenue freight amounted to 268,373,000 tons, or 9.9 per cent of the total tons carried, and to 42,565,832,000 ton-miles, or 8.7 per cent of the ton-miles carried. During the first eight months of 1941, the railroads received 30 per cent more material, 17 per cent more fuel and ordered 200 per cent more equipment than in the first eight months of 1940, from which it follows that the railroads carried more tons and more ton-miles of their own materials that year by a substantial margin, than in 1940.

Baltimore & Ohio—6 Per Cent

Wide variations exist in the relation of non-revenue to total freight carried by different railroads, whether expressed in tons or ton-miles. In the East, where sources of supply are most numerous, the railroads carried less non-revenue freight per ton of freight carried than in the South and West. Short lines carried less, proportionately, than long lines. Non-revenue freight carried per ton-mile was smaller than non-revenue freight per ton carried on almost all railroads. The differences between railroads, however, are unexpectedly large. Non-revenue freight in 1940 was 19.8 per cent of the tons carried and 12.0 per cent of the ton-miles carried on the Atchison, Topeka & Santa Fe, 21.5 per cent of the tons and 14.8 per cent of the ton-miles on the Union Pacific, 11.5 per cent of the tons and 10.4 per cent of the ton-miles on the Southern, 11.5 per cent of the tons and 11.4 per cent of the ton-miles on the Illinois Central, and 11.7 per cent of the tons and 12.7 per cent of the ton-miles on the Chicago, Milwaukee, St. Paul & Pacific. By contrast, the ratios per ton and ton-miles were 5.2 and 5.0 on the Chesapeake & Ohio, 8.9 and 6.4 on the Pennsylvania, 8.2 and 8.0 on the Great Northern, 6.1



and 2.8 on the Lehigh Valley, 7.5 and 7.2 on the New Haven, and 7.5 and 6.0 on the Baltimore & Ohio. The Baltimore & Ohio's ton-mile ratio was 6.6 in 1939, 6.2 in 1938, 6.8 in 1937, 6.5 in 1936, 6.6 in 1935, 6.7 in 1934, 6.9 in 1933 and 6.7 in 1932.

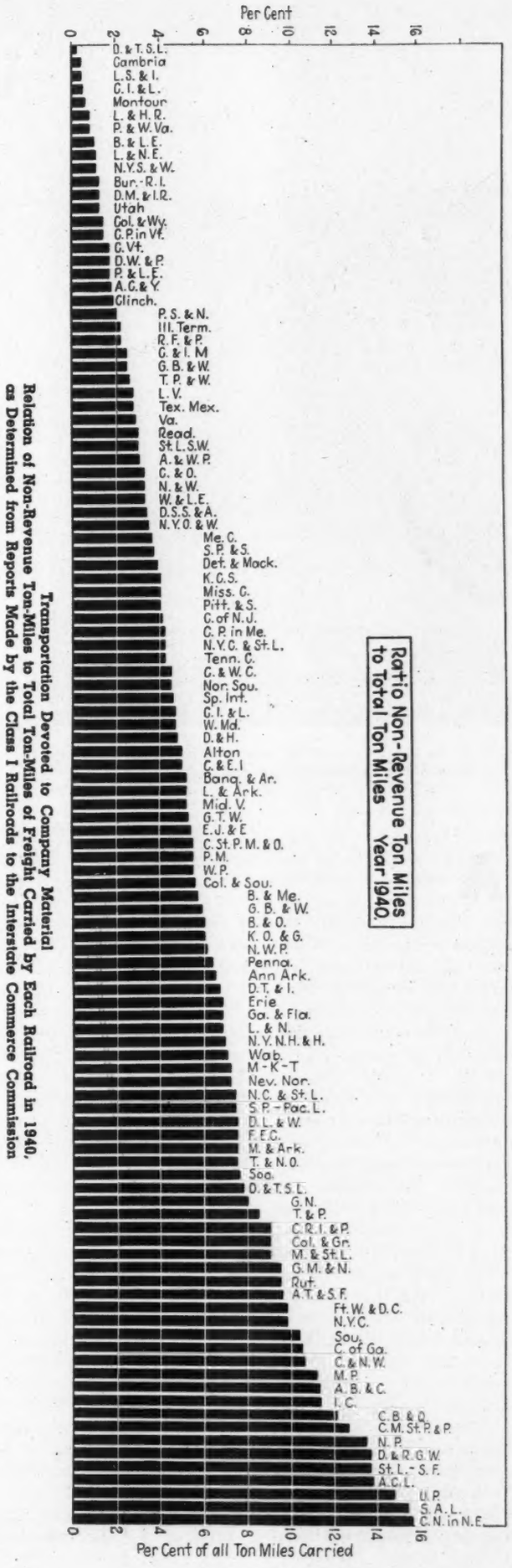
How Much Rehandling?

Most of the non-revenue freight carried by the railroads is, clearly, comprised of purchases of coal, fuel oil, rail, ties, lumber and ballast. This was demonstrated by taking the quantities of materials that were reported to this paper as purchased by each railroad in 1940, reducing to tons the quantities which were not reported in tons, and then subtracting the totals from the tons of non-revenue freight which were carried by each railroad in 1940, as reported to the I. C. C. The remainder in each case is thus a rough indicator of the tons of miscellaneous materials purchased and the tons of materials rehandled on each road. The calculations indicated that the tons of non-revenue freight, exclusive of fuel, ties, rail, lumber and ballast, was approximately 12 per cent of the tons of all freight carried on the Santa Fe, 8.8 per cent on the Atlantic Coast Line, 4.2 per cent on the Boston & Maine, 4.0 per cent on the Central of New Jersey, 4.2 per cent on the Denver & Rio Grande Western, 5.7 per cent on the Florida East Coast, 2.7 per cent on the Southern, 5.1 per cent on the Missouri Pacific, 3.2 per cent on the Illinois Central and 2.9 per cent on the Pennsylvania.

Railroads Biggest Shippers

No records of the number of freight cars used in handling non-revenue and shipments for railroads are available. Neither is it possible to say how many of the cars used for railway materials are adapted for revenue service, as distinguished from old or special equipment, used only by railroads for company materials. But the number of revenue service cars is large. Railway purchases require at least 2,000,000 carloads of fuel, 280,000 carloads of fuel oil, 5,000 carloads of gasoline, 70,000 carloads of crossties, 400,000 carloads of lumber and over 100,000 carloads of steel, or a total of over 2,865,000 carloads of these materials alone, on the basis of purchases last year, and this does not include rehandling and strictly local shipments. It does not seem improbable that the transportation of railway materials in 1941 may have involved 4,000,000 car movements. Allowing only four days per car, in transit, loading and unloading, this is equivalent to a demand of 16,000 car-days on the transportation service. The railroads own about 1,700,000 cars. It is apparent that the carriers are among the largest shippers and that one of the problems for some time to come will be that of purchasing and routing with a view to using fewer car days and integrating the transportation of railway materials with other traffic in such a way as to reduce the demand for freight cars for railway material when the demand for other freight service is greatest.

A RIDE IN AN ENGINE CAB was the Pennsylvania's gift to one of its most regular long-distance patrons, William H. Abbey of East Orange, N. J. He has made a business trip from Newark, N. J., to Pittsburgh, Pa., on an average of six or seven times a year for the past 37 years. On February 1, his 250th round trip to Pittsburgh since 1905, he rode between Newark and Harrisburg, Pa., in the cab of a big GG-1 electric locomotive on the front end of the "St. Louisian," thereby realizing a life-long ambition.



Transportation Devoted to Company Material
Relation of Non-Revenue Ton-Miles to Total Ton-Miles of Freight Carried by Each Railroad in 1940, as Determined from Reports Made by the Class I Railroads to the Interstate Commerce Commission

Wood-Preservers Study Needs of Defense Era

Key program to changing requirements of today — Wood not on critical list

One of the Many Treated Tie Test Sections on the Atchison, Topeka & Santa Fe—Between Heman and Mooreland, Okla.

APPROXIMATELY 325 railway and other men interested in the treatment and use of wood, gathered at Minneapolis, Minn., on January 27-29 for the thirty-eighth annual meeting of the American Wood-Preservers' Association. The keynote for the meeting was sounded at a conference at the Forest Products Laboratory at Madison, Wis., on January 26, attended by approximately 175 persons enroute to the convention—namely, the possibility of processing wood to meet the shortage of critical metals resulting from the greatly enlarged demands of national defense. At this conference, and throughout the meeting at Minneapolis, many developments were cited where new and improved utilization of wood in plywood, laminated and other forms was releasing metal for other and more essential needs. Throughout, the program was keyed closely to the needs of the present day.

W. R. Goodwin, engineer, wood preservation, Minneapolis, St. Paul & Sault Ste. Marie, presided over all sessions of the meeting as president. Shortly after calling the meeting to order, he reviewed the work of the association during the year. He also referred to the results which the railways of the Northwest are securing from the treatment of their ties, mentioning specifically white birch ties treated by the Buehler process in 1908 and still in service in the Twin Cities-Twin Ports line of the Great Northern. "The Soo Line," he added, "also began treating ties in 1920 and its annual tie requirements are now less than half of what they were annually for the five-year period ending in 1925."

At the closing session, the following officers were elected: President, W. P. Conyers, Jr., vice-president and treasurer, Taylor-Colquitt Company, Spartanburg, S. C.; first vice-president, R. H. Colley, engineer, Bell Telephone Laboratories, Inc., New York; second vice-president, W. P. Arnold, technical director, The Wood Preserving Corporation, Orrville, Ohio; treasurer (re-elected), H. L. Dawson, Washington, D. C.; members of the Executive committee, A. J. Loom, general superintendent, timber preservation and tie treating plants, Northern Pacific, Brainerd, Minn.; R. H. Rawson, consulting timber engineer, Portland, Ore.; and T. A. Wilson, superintendent, timber department, Consolidated Gas, Electric Light & Power Company, Baltimore, Md. The association voted to hold its next meeting in Cincinnati, Ohio. At a meeting of the Executive Committee immediately following the close of the convention, it was decided that this next meeting should be held on April 27-29, 1943, thereby departing from the long-established practice of meeting the fourth week in January.

Among the addresses of special interest to railway men were a review of the Service Rendered by Various Species of Tie Timber on the Northern Pacific, by Bernard Blum, chief engineer of that road; a report on The Use of Gum Ties on the Missouri Pacific, by W. J. Burton, assistant to the chief engineer of that railway; and a Survey of the Adequacy of the Supplies of Creosote and Other Preservatives, by George M. Hunt, chief of the Division of Wood Preservation, U. S. Forest Products Laboratory, Madison, Wis. These papers are abstracted at some length below.

Preservatives

Of special importance and marking a radical departure from its long maintained policy was the action of the association (1) in accepting as standard (submitted by its Committee on Preservatives, of which J. S. Giddings, inspector, A. T. & S. F., was chairman), specifications for creosote-coal tar solutions for solutions other than 80 per cent creosote and 20 per cent coal tar, thereby recognizing a practice that has received wide acceptance

by the railroads for the treatment of crossties, and (2) accepting the further recommendation of the Preservatives committee that specifications be prepared for chromated zinc chloride and for Tanalith-U (Wolman salts), both of these preservatives meeting the six fundamental requirements drafted by the committee as prerequisites for the preparation of association specifications for preservatives as follows.

1. It must be toxic to wood-destroying fungi.
2. It must possess satisfactory physical and chemical properties which govern its permanence under the conditions for which it is recommended for use.
3. It must be relatively free from objectionable qualities in handling and use.
4. Its value as a preservative must be supported by experimental and/or service data.
5. It must be in actual commercial use.
6. It must be subject to satisfactory laboratory and plant control.

In initiating this recognition of these two preservatives, the association departed from its heretofore rigidly-maintained procedure of recognizing only creosote and zinc chloride as accepted preservatives. The association also accepted "solution" rather than "mixture" as standard terminology for combinations of creosote and petroleum.

Specifications

As in past years, the association gave much attention to the development of specifications for the treatment of various species of timber. A specification covering methods of treatment (but not requirements for the penetration of the preservative) for gum ties and lumber by pressure processes was submitted as information. In this specification, kiln drying was included as a permissible method of conditioning. Steam conditioning was also allowed, but at lower temperatures than permitted for Southern pine, the maximum temperature permitted being not much above those commonly used in conditioning or treating with oil.

Another committee added penetration requirements to a specification previously drafted for the treatment of Southern pine ties and lumber by pressure processes and then submitted the composite specification for adoption, as a tentative standard, which recommendation was approved by the association. The association also approved a recommendation of still another committee that revised specifications for the treatment of Pacific Coast Douglas fir ties, piles and poles by pressure processes be advanced to standards, but held as tentative for one year the further recommendation of the committee that these same specifications be accepted as sufficiently broad to include the treatment of inter-mountain fir and western hemlock.

Continuing its work of some four years, a committee charged with the task of preparing specifications for the treatment of oak ties and lumber by pressure processes, continued its study of the penetration of preservative to be desired. A year ago the committee recommended that for red oak a penetration of at least 65 per cent of the annular rings could be obtained commercially with the use of good standard practice. This year the committee reached the further conclusion that in white oak, penetration of practically all the sapwood should be expected but that little or no penetration of heartwood can be specified. In fact, the committee added, if the sapwood penetration of white oak is thorough, it can reasonably be assumed that the best practicable job has been done on the heartwood. It then presented the following tentative requirement for penetration in white oak: "That 95 per cent of the sapwood rings shall be penetrated; that no heartwood penetration shall be specified. To determine compliance with this requirement a minimum of 20 penetrance cores from each charge shall be examined." This recommendation was approved by the association.

In the treatment of posts by pressure processes, a committee reached the conclusion that one specification will cover the pressure treatment of posts of all commercial pines, with certain amendments to provide special limitations on treating details for jack pine, lodgepole pine and red pine, and submitted this specification to the Association this year for adoption as a standard, which recommendation was approved by the Association.

A committee studying the treatment of poles by non-pressure processes gave special consideration to the ground line treatment of poles in a line. Calling attention to the fact that the replacement of individual poles often involves considerably more expense than the original cost of setting the pole, and that 25 to 50 per cent of the cost of a wood pole line may be represented by the poles themselves, the committee presented brief reports on several methods for arresting decay at the ground line and thereby extending the life of the poles including the (1) charring and spraying; (2) osmoplastic; (3) sodium fluoride-creosote; (4) Anaconda wood preservative paste; (5) concrete protective sleeve; (6) creosote felt wrapping; and (7) pfister.

Service Records

Second in interest only to its work on treating specifications, the Association has long given consideration to service records of treated timber. The Committee on Tie Service Records, of which A. J. Loom, Northern Pacific, was chairman, presented reports on ties placed in test sections in tracks of the C. & N. W.; the C. B. & Q.; and the C. M. St. P. & P. It also presented a detailed report of test tracks installed by the Northern Pacific near Plains, Mont., in 1907, near Missoula, Mont., in 1910 and near Thompson Falls, Mont., in 1915.

Records obtained from the Plains test track show that there was practically no difference in the relative durability of untreated green and seasoned ties of either Douglas fir or western larch. Irrespective of track equipment, the average life for the green and seasoned larch proved to be 7.3 years and 7.4 years, respectively. The average life for the green and seasoned Douglas fir ties was 7.6 years and 7.7 years, respectively.

The service life figures of 17.5 years for Douglas fir and 18.6 years for western larch, obtained from zinc chloride-treated ties in the Plains test track, are considered to be above the averages generally obtainable from this type of preservative. After some years of service, all of the treated ties in this test were turned over, and this undoubtedly increased their life. Also tending to prolong the life of these test ties was the use of a six per cent solution of zinc chloride, resulting in a net retention of 0.8 lb. of dry salt per cu. ft., rather than the four per cent solution with ½-lb. net retention specified in many instances for zinc chloride treatments.

The most severe test of the lasting qualities of the various species included in the Thompson Falls test track was that given to each of the groups on a 2-deg. curve. At the latest inspection of the creosoted ties in this test, after 26 years' service, the life expectancies of the Douglas fir and western larch ties on the 2-deg. curve appeared to be about equal. On the same curve, the treated lodgepole pine and white fir ties also showed very little

difference in their comparative life expectancies. The treated ponderosa pine ties will have a considerably longer life than any of the other species included in this study, both on the tangent and on the curves.

The Committee on Marine Piling Service Records, of which A. S. Daniels, superintendent of the Texas & New Orleans Railroad Wood Preservation Plant, was chairman, presented detailed data regarding structures of the Southern Pacific in San Francisco Bay and a voluminous progress report on exposure tests at Almirante, Panama, and Newport, R. I., prepared by Albert P. Richards of the W. F. Clapp Laboratories, Duxbury, Mass.

Another committee on Pole Service Records, of which H. A. Haenseler, Western Union Telegraph Company, was chairman, presented service records of numerous pole line installations, including one of 4,698 Douglas fir poles treated with Z. M. A. by the full-cell process and installed between Wolf Point, Mont., and Williston, N. D., in 1930; another of 4,600 Douglas fir poles treated with a 7-lb. mixture of 75 per cent creosote and 25 per cent petroleum, placed between Wolf Point, Mont., and Bowdoin in 1929; a third of 3,725 Douglas fir poles treated with zinc chloride and set between Grand Forks, N. D., and Devils Lake in 1929 and a fourth installation of 600 lodgepole pine poles treated with a 10-lb. mixture of 60 per cent creosote and 40 per cent petroleum and placed in 1928 between Wenachee, Wash., and Leavenworth. All these installations are on the Great Northern. Of these, no decay has been found in either group treated with petroleum mixtures, while about 10 per cent of those treated with zinc showed a "paper thickness" of decay in the sap wood and nearly a quarter of those treated with zinc chloride had decay infection and a number had checked heavily.

The committee also reported on an installation of 3,029 creosoted southern pine poles installed by the New Haven railway between New York City and New Haven, Conn., in 1928, in which inspection in 1941 showed that 190 had been removed for causes other than decay, 14 had been removed because of decay and 1 because of bird attack, 87 showed decay but were still serviceable and 2,737 were still sound after 23 years' service.

Other Papers and Reports

A committee on the Uses of Treated Wood in Car Construction, of which H. R. Condon, vice-president, Wood Preserving Division, Koppers Company, was chairman, reported the use last year of some 845,000 ft.b.m. of treated decking nailing sills, running boards and coal car sides by the St. Louis-San Francisco; and approximately 1,500,000 ft.b.m. for similar purposes by the Louisville & Nashville. In addition, the D. & R. G. W. used creosoted decking in 100 stock cars built last year, duplicating an installation of the same size made in 1940. The committee reported also that the Boston & Maine uses salt treated pine for all maintenance decking for box cars, requiring some 600,000 ft.b.m. of this lumber each year.

In a report on the use of treated bridge and structural timber, a committee of which T. H. Strate, division engineer, C. M. St. P. & P., was chairman, presented a report on 60 bridges and 7 culverts, all of creosoted timber, which were installed on the Tucson, Cornelia & Gila Bend Railway in Arizona in 1916, and all of which were found, in an inspection made early in 1940, to be in excellent physical condition after 25 years' service, with prospects for considerable additional life, even though the timber was not incised, no framing was done prior to treatment, and no detailed records of field treatment of cut surfaces are available.

In a paper dealing with the development of fireproofing standards for pressure treated lumber, L. K. Andrews, of the American Lumber and Treating Company, showed that "various degrees of fire resistance can be obtained by impregnating wood with various retentions of fire-retarding salts. Although fire resistance increased as the retentions of fire-retardant salts were increased, no substantial degree of fire resistance was observed in these studies for retentions less than 3 lb. per cu. ft. of wood. On the other hand, retentions in excess of about 6 lb. per cu. ft. apparently are not justified because the increased fire resistance is very slight."

In another paper, attention was directed to tests which showed that commonly used fire retardents in which sodium dichromate was absent were definitely corrosive to all metals with a few exceptions, while sodium dichromate inhibited corrosion to a greater or less degree in all except a few cases, where it actually accelerated corrosion.

Two papers were presented by members of the staff of the Bell Telephone Laboratories, Inc., dealing with a new preservative, known as greensalt. This product, a solution of chromium, copper and arsenic salts in water, was developed by an officer of the Forest Service of India. It is said to leave the timber clean and paintable, at a final cost that compares favorably with creosote. Neither the preservative nor the timber is heated and the treating time is considerably less than that called for in conventional treatment with creosote.

In a review of wartime conditions in the wood preserving industry, W. A. Summerhays, assistant purchasing officer on the Illinois Central, and for some months consultant in the Office of Production Management at Washington, outlined the problems involved in changing our national production machinery over from peace time to war objectives and pointed to the still further demands for timber and for preservatives that may yet be expected.

Among still other reports of interest to the railways included those on the painting of creosoted wood, on post service records, on the pressure treatment of poles and on diversified uses for treated wood, the latter including references to the utilization of treated timber in railway-built banana storage warehouses, passenger stations and platforms.

Gum Ties on the Missouri Pacific

By W. J. Burton*

The last 25 years have witnessed a gradual shift from oak crossties. Prior to the use of treated ties, practically all of the ties used by the Missouri Pacific were of the white oak group. Later, when treatment was introduced, red oaks were substituted in increasing proportions but comparatively few ties were used which were not some kind of oak. This shift from the red oaks has not been through choice but because of production conditions beyond our control. The hill-grown red oak, when properly creosoted, is the preferred tie. In 1921, oak ties made up 75 per cent of the total that we purchased. By 1930 this percentage had dropped to 67 and in 1940 it was only 38. In place of oaks, pines and gums have been substituted until in 1940 the pines amounted to nearly 36 per cent of the total and gums to about 26 per cent.

Gums first began to be used in sufficient numbers to attract attention about 1918. Our experience with these earlier gums was not altogether reassuring. There were many early failures, generally characterized by decay at the centers of the ties, leaving mere shells of treated wood. Frequently the exposed part

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of the tie appeared perfectly sound but a hollow sound resulted from testing with a bar. Like ties of other woods, the failures were most serious around the rail seats and spike holes. Lack of attention to certain details now considered necessary for good results, rather than any inherent fault of the wood, is believed to be the cause for gum having received a decided black eye among our maintenance men. We now feel that a properly handled and treated gum tie will give excellent service.

There are several names by which the different gums are known. Red gum, sap gum and sweet gum or star-leaved gum come from the same tree botanically. The botanical name, as well as the common name gum, refer to a yellowish, fragrant, balsamic liquid which exudes from the bark, particularly of trees grown in the deep South. The name red comes from the color of the heartwood. The sapwood is nearly white. Star-leaved gum ties that are largely of heartwood are called red gums; those with small heartwood are called sweet or sap gums. Star-leaved gum usually does not split easily, though it does not have the interlocking cross grain that is characteristic of the tupelo gums. In all of the gums the annual rings are inconspicuous or even invisible to the unaided eye. The heartwood of red gum is extremely resistant to the penetration of preservatives, and probably for the same reasons, is moderately resistant to decay. Red gum is the least desirable of the gums for crossties because of this resistance to preservatives.

The other woods going under the name of gum come from an entirely different genus and family of trees. These are known as the tupelos, of which there are four species, black gum, tupelo gum, swamp black gum, and ogeche tupelo. The confusion in names is to be noted. This is partly because the same tree goes by different names in different localities. However, even with a high power microscope, an expert often cannot distinguish between the wood from these four species and while the black gum is usually somewhat heavier and stronger than the others, all four are so nearly equal in desirability for crossties that distinction is not attempted. The black and tupelo gums are most common in Missouri Pacific territory.

The black gum is found in all of the states east of the Mississippi river and in southern Missouri, Arkansas, Louisiana and east Texas. In the South it is found on well-drained locations. The black gum has oval-pointed leaves instead of the star-shaped leaves of the red or sweet gum. The leaves are somewhat leathery and the top surfaces are smooth and dark green. The under surfaces are somewhat downy.

The other gums are water loving and are found in swamps or along streams. Their range includes a 100-mile belt along the Atlantic coast from Virginia to northern Florida and thence westward through the Gulf states to southern Texas and up the Mississippi River valley to southern Illinois. They are commonly found along with cypress and in locations where the virgin cypress was removed at the time the gum was considered worthless, the regrowth has been largely of the tupelo and swamp black gums. The swamp-grown gums often have enlarged trunks near the roots, somewhat like the cypress.

When dry, the wood of the black and tupelo gums takes on a characteristic grayish white sheen. The grain is interlocked and crossed to a marked degree. This is a disadvantage, so far as use for lumber or woodwork is concerned, but is desirable in the case of crossties because such ties do not split; in fact, they usually cannot be split with an ax. Anti-splitting irons are unnecessary with these ties. Unlike the red or sweet gums, the black and tupelo gums have heartwood which is easily penetrated with preservative and this fact, together with the twisted grain, makes the latter much to be preferred for crossties.

All of the gums have the characteristic of becoming infected easily after having been made into crossties and of decaying very rapidly. This characteristic calls for two special measures which experience has shown to be important. The first is to limit the cutting and manufacture to the winter months when there is less chance of infection while in the woods or moving to the seasoning yard. The other is to insist on very prompt handling from the point of delivery to the plant. Such movement, if the weather is warm, should be in open type cars. Both of these measures are desirable for all ties, but are almost imperative with gum ties.

Because the heartwood of red gum is so very resistant to preservative, and because otherwise heartwood would be exposed on the faces of the tie, it is Missouri Pacific practice to require the heartwood of all red gum ties to be entirely surrounded with sapwood. Ties not meeting this requirement are not accepted. Knowing of this requirement, producers do not offer ties which do not comply, and rejections on this account are infrequent.

As in other woods, there is considerable variation in the amount of moisture present in freshly-cut gum ties and a like variation in the desirable time of seasoning, dependent not only on this moisture but upon the climate at the yard. Gum ties require very careful watching to detect the growth of decay, once it has started. This is particularly difficult because of the molds which frequently discolor the ends of gum ties, particularly when seasoned in the South. It is sometimes necessary to treat gum before the moisture conditions are the best, to save the ties from decay in the stack. However, with cleaner yards and closer attention to prompt movement to the yards, and insistence on winter cutting and manufacture, cases requiring premature treatment are uncommon. Seasoning time is usually six to eight months. Rather open stacking is desirable; not over eight ties to the stringer tie is Missouri Pacific practice. All five standard sizes are purchased. The percentage of small sizes, that is, sizes 1 and 2, runs somewhat less than in the case of the pines.

Tie Service on the Northern Pacific

By Bernard Blum*

The Northern Pacific was the first railway constructed in the Northwest. When this line was started in 1870, there seemed to be an inexhausible supply of timber in the territory to be served. Except in North Dakota and Eastern Montana, there were heavy stands of good timber along the entire route from Lake Superior to the West Coast.

White oak, white pine, cedar and tamarack forests in Minnesota supplied all cross tie requirements of the Northern Pacific as far west as Billings, Mont., until 1907. Previous to that year there was little difficulty in obtaining ties made from the best of these timbers. But lumber prices were advancing and it was becoming apparent that only inferior timber of the species mentioned would be available in Minnesota for crossties, owing to the more attractive prices being paid for lumber and there was beginning to be an actual scarcity of tamarack. Minnesota cedar was still available but experience had proved it to be too soft for good support under the ever-increasing wheel loads.

There was no great demand at that time for red oak, birch, rock elm and maple timbers that were still plentiful, principally on account of their short life in contact with the soil. Crossties of these species were known to decay very rapidly and had an average service life of only 3 to 5 years untreated. The average service life of untreated ties used previously in the districts from Billings east was approximately as follows: white oak—12 years; cedar—15 years; white pine—9 years; tamarack—9 years. Inland Empire fir and larch and Coast fir ties used untreated in the districts west of Billings were lasting from 7 to 10 years. It was evident therefore that if inferior woods were to be made use of economically, they would have to be treated.

After considerable investigation of the various processes and preservatives then in use on other railroads and on the recommendations of the leading timber treating authorities of that time, the Northern Pacific constructed two plants for treatment with creosote by the Lowry process in 1907. The first ties treated were placed in track in the spring of 1908. One of these plants was located at Brainerd, Minn., for the treatment of Minnesota timbers to supply the requirements from Billings east, and the other at Paradise, Mont., for treatment of Inland Empire and coast timbers for use west of Billings.

In 1927 it was decided that, in order to meet the increasing demand for treated material in the Coast district and to avoid the long haul from Paradise, it would be desirable to treat at commercial plants that were located nearer the points of ultimate use. Arrangements were made, therefore, for treatment at Seattle and later at Spokane, Wash.

At present there are approximately 26,109,000 crossties in all tracks of the Northern Pacific, of which about 47 per cent are treated hardwoods, 51 per cent treated softwoods and only about

* Chief Engineer, Northern Pacific.

2 per cent untreated fir, tamarack, white oak and cedar. The treated hardwood ties are about 40 per cent red oak, 40 per cent birch, 15 per cent maple and the remaining 5 per cent consists of white oak, rock elm, beech and a few ash ties. These hardwoods were grown in Minnesota, Wisconsin and Michigan.

The treated softwood ties are principally from timber grown in Montana, Idaho and Washington, although there are still in service a considerable number of Minnesota tamarack and jack pine ties. The percentage of each of the treated softwood species is about as follows: 35 per cent Douglas fir, both Inland Empire and Coast, 30 per cent tamarack or larch from the Inland Empire and Minnesota, 30 per cent western yellow pine from the Inland Empire and about 5 per cent hemlock, lodgepole pine and jack pine. The hemlocks are principally from the coast and the lodgepole pine ties all come from Montana.

Tie test tracks established on the Northern Pacific from 1907 to 1922 indicate that the average life of each species of treated ties in use is as follows: (1) red oak—34 years; rock elm—34 years; maple—33 years; birch—32 years; ash—28 years—or an average of 33 years for the hardwood group; (2) Douglas fir—25 years; tamarack and larch—24 years; western yellow pine—27 years; lodgepole and jack pine—21 years; hemlock—31 years—or an average of 25 years for the softwood group.

The average life stated for treated ties is based on the actual number of ties renewed, regardless of the cause for removal. Most of the ties of all the species have been renewed on account of mechanical wear rather than decay. Treatment of the so-called inferior woods has reduced the element of decay so that the durability of treated crossties depends more on the physical characteristics of the wood than on its resistance to decay. The so-called inferior woods have given better service after treatment than any of the best tie timbers that were ever used untreated.

The hardwoods, of which I think red oak makes the best tie, are giving the best service on account of their treatability and their superior resistance to crushing, spike pulling and lateral displacement of spikes and general mechanical wear. Inland Empire Douglas fir and larch ties have proved to be the most difficult to treat on account of their resistance to penetration of the preservative. Treatment to refusal often results in only half the absorption obtained in Coast Douglas fir but in spite of this, service records indicate that their life is fully as long.

Treated western yellow pine and western hemlock ties are showing a longer life than was expected from these woods, in view of their comparatively lower strength properties. Pine and hemlock ties check and split less during seasoning and in service than the other ties mentioned and, with the exception of red oak, they are the easiest in which to obtain the required absorption and most uniform penetration in treatment. This no doubt accounts to a large extent for their good service.

Straight creosote and an 80-20 creosote-coal tar solution were used in all treatment on the Northern Pacific from 1907 until 1920 when, on account of the apparent ever-increasing costs of these preservatives, the management decided to fall in line with other railroads who were experimenting with creosote-petroleum mixtures. After considerable investigation of other preservatives, a mixture of 45 per cent No. 1 creosote and 55 per cent petroleum fuel oil was chosen for the treatment of ties and various other materials for inland use. The use of No. 1 creosote was continued for the treatment of piling and timbers for salt water use and also for some materials that require cleaner treatment.

With the exception of cedar, which is still used to a considerable extent untreated for piling in inland structures, Douglas fir from the coast has been used almost entirely for piling, bridge material and lumber. Our creosoted pile records, extending back to 1909, indicate an average service life of at least 30 years for treated Douglas fir piles in the teredo and limnoria-infested waters of Puget Sound where untreated piles are often completely destroyed by these marine borers within a few months.

An interesting service test was started at Seattle in 1919 to determine the comparative activity of marine borers in Puget Sound and San Francisco Bay. Some creosoted Douglas fir piles that had been in Southern Pacific service in its Long Wharf at Oakland, Cal., for 18 to 29 years were moved to Seattle and replaced in Northern Pacific Pier No. 1. At the last inspection, all of these piles are reported in good condition. Untreated piles placed in the same location at the same time were completely destroyed within 3 years.

Untreated Douglas fir bridge material is lasting from 8 to 16 years in other than salt water service. Creosoted material of the same kind promises to last from 30 to 40 years. A considerable quantity of other Douglas fir materials, such as cross arms, culverts, etc., has been treated and placed in service over a period of years without any renewals to date, but in most cases the records are not yet old enough to warrant quoting either actual or estimated service life.

The net retention of preservatives per cubic foot has averaged 8 lb. in cross ties and switch ties, 12 lb. in lumber, 12 lb. in piling for inland use and 16 lb. in piling for salt water use. Penetration has average ¾ in. in ties and timber of tie size and from 1 in. to 2 in. in piling.

Tie renewals on the Northern Pacific for the 20 years previous to the extensive use of treated ties averaged 11.5 per cent annually. During the past 12 years only 3.9 per cent have been renewed annually. Larger rail, better ballast and generally improved track conditions, as well as the treatment, have contributed to the longer life of ties but it is safe to say that treatment can be given credit for most of the reduction in cross tie renewals during the past 12 years.

The adzing, boring and incising of crossties and the incising and framing of lumber and bridge material before treatment have resulted in much more satisfactory penetration and distribution of preservative, without necessarily increasing the quantities of preservatives or the total time required for treatment. Treated hardwood ties, principally red oak, are now being used for curves over the entire main line on account of their better resistance to spike pulling and lateral displacement of spikes.

With the heavier rail and tie plates and better ballast now in use and the generally improved maintenance practices, it is believed that, with proper air-seasoning and treatment, softwood ties may be made to last about as long as the average hardwoods have up to the present time.

Northern Pacific records of 35 years' experience with untreated ties, followed by 35 years' experience with treated ties of the species grown in the Northwest, indicate that these woods have furnished satisfactory tie timber. The hardwoods, as well as some of the softwoods that were known to decay within five years without treatment, have, after air-seasoning and treatment with either creosote, 80-20 creosote-coal tar solution or 45-55 creosote-petroleum mixture, proven to be the best ties.

The Outlook for Preservatives

By George M. Hunt*

Like most other industries at this time, the wood preserving industry finds itself facing a serious emergency. During 1941, wood preservers treated a considerably larger quantity of lumber and timber than in 1940. In fact, when the figures are available, it is expected that 1941 will show a larger amount of timber treated than any other year since 1930.

In the face of a great increase in the demand for creosoted wood, there has been a substantial decrease in the amount of creosote available, owing to a great decrease in the amount of creosote imported. This shortage is felt most keenly by plants on or near the Atlantic, Gulf and Pacific coasts, which have depended largely upon imported creosote but it is being felt to some extent throughout the country.

For the 9 months ending September 30, 1941, imports are reported by the Department of Commerce to have amounted to 12,971,656 gal., which is probably very close to the total for the year. This is about one-third of the amount imported in 1940 and about 35 million gallons less than the average importation for the years 1936 to 1940, inclusive.

No one can safely predict what the creosote imports in 1942 will amount to. There appears to be plenty of creosote in the United Kingdom for export, despite its use there for fuel and, presumably, we could look forward to an ample supply if the oil could be transported more freely. Since all imports and exports are under strict control, however, and are governed primarily from the standpoint of military strategy and war-time economy, other factors than the needs of the American wood-preserving industry must determine the creosote import policy in

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1942. It seems probable that enough foreign creosote can be allowed to enter the United States in 1942 to avoid plant shutdowns but it is certain that unlimited imports will not be permitted and that surplus stocks of imported creosote will not be accumulated.

There apparently was a large amount of creosote in storage in the United States at the beginning of 1941. The amount carried over from 1940 may have been 30 to 40 million gallons. This was about enough to make up for the shortage in imports and was a very important factor in enabling plant operators to increase the volume of timber treated in 1941, despite the shortage of imports. This condition does not exist at the beginning of 1942, however, since the stored creosote has been used up, and both the treating plants and the creosote suppliers have entered the new year with very low stocks.

A factor that has favored creosote plant operators in 1941 is the increase in the amount of domestic creosote produced. This increase is difficult to estimate with any degree of accuracy, but it seems certain to fall considerably short of compensating for the decrease in importations. The increase in creosote production has been brought about by an increase in the amount of tar available for distillation, an increase in the average yield of creosote per gallon of tar distilled and, to a lesser extent, an increase in tar distilling capacity. The outlook for 1942, of course, is uncertain, but indications point to a further increase in domestic production of creosote over that of 1941.

Supply of Salt Preservatives

The supply of salt preservatives in 1941 apparently was sufficient, for we have received no reports that the operation of any treating plant has been hindered by a shortage of salt preservatives, although the amount of timber treated with preservative salts in 1941 was probably somewhat greater than in 1940. This favorable situation will not necessarily continue in 1942, however, for it can very easily be changed by military requirements and the decisions of the controlling agencies.

At the time this is written, there seems no immediate danger of a serious shortage of zinc chloride. The supplies of zinc ore and hydrochloric acid appear to be adequate and there is no immediate prospect that this situation will change but we have ample evidence that changes can take place very suddenly. The amount of zinc chloride used for wood preserving in 1940, including that used straight as well as that in chromated zinc chloride, totalled about 4½ million pounds. The 1941 total was undoubtedly higher.

Zinc is also a necessary ingredient in zinc-meta-arsenite, of which some 200,000 lb. was used for wood preservation in 1940. In preparing this preservative, the zinc is used in the form of zinc oxide and the arsenic in the form of arsenious oxide. The supply of either one is not unlimited but has apparently been equal to the need thus far.

Chromium salts are important ingredients in several of the salt preservatives in extensive use. Sodium dichromate makes up about 18 per cent of the weight of chromated zinc chloride and about 50 per cent of Celcure, while Tanalith (Wolman salt) averages about 37½ per cent sodium chromate. The 1¼ million pounds of chromium salts used for wood preservation in 1940 were no doubt considerably exceeded in 1941.

With chromium salts, the situation is quite different than with zinc chloride, for dependence must be placed almost entirely upon imported chromium ores. As a result, the amounts of chromium ore that refineries may consume and the uses and allocations of chromium and chromium chemicals are under very strict control by the government. Naturally, the most urgent national defense uses receive highest priority ratings and non-defense uses are largely eliminated. The increase in chromium salts used by wood-preserving plants in 1941 over 1940, in the face of these restrictions, is possibly attributable to the fact that salt treatments in 1941 were considered mainly for high-priority national defense structures. A prediction by the writer of what to expect in 1942 with regard to the chromate supply would be sheer guesswork.

In addition to the chemicals named above, sodium fluoride, sodium arsenate, and dinitrophenol are necessary ingredients in Wolman salts. Copper sulphate constitutes 50 per cent of Celcure preservative. Of these chemicals, dinitrophenol and sodium fluoride are under close control but the supplies of all have been low for some time and their availability for wood preservation in 1942 will be determined so largely by needs for other uses that they cannot be predicted by the writer.

Although an acute preservative shortage does not appear certain, treating plant operators and users of treated wood will be unwise if they ignore the possibility that economic and military developments may change the entire picture. During 1918 to 1921, for example, when the supply of creosote was limited, there was plenty of zinc chloride available and the amount consumed per year rose from 26 million pounds in 1917 to more than 51 million pounds in 1921. That is not likely to happen this time, however, because there are other substitutes for creosote that are much better than zinc chloride for outdoor use. During the 1918 to 1921 emergency, also, the use of creosote-petroleum solution began in earnest but this practice has proved so effective that it has increased greatly since that time.

In considering what can be done in the event of inadequate supplies of creosote and of the customary salt preservatives, it is well to see what has already been done in some cases.

One large consumer of creosote-petroleum solution, who customarily has used not less than 50 per cent of creosote in the mixture, has had to reduce the percentage of creosote by half. In view of the uncertainty that this preservative will be sufficiently effective in the usual absorptions, he has increased the absorption from about 8 to 10 lb. per cu. ft. The net result of the change is that the ties receive only 2.5 lb. of creosote per cu. ft., which is a net saving of at least 1.5 lb. of creosote per cu. ft. No general shortage of petroleum for wood preservation is anticipated but there may be temporary or local shortages due to transportation difficulties.

Other consumers, who have for many years insisted on creosotes with not over 20 per cent (or 25 per cent) distillation residue above 355 deg. C. have been unable to secure adequate quantities of such oil and, for the time being, have raised the acceptable limit to 30 per cent or even higher. Steps are now being taken to amend the Federal specifications for creosote and for creosote-petroleum solutions, for the duration of the war, to permit residues up to 35 per cent. In general, a 5 per cent increase in residue above 355 deg. C. should increase the yield of creosote from tar by about the same percentage, which is important in the time of shortage.

The consumers referred to felt that they had good reasons for their former preference for a high percentage of creosote in their creosote-petroleum solutions and for relatively low residue creosote. The changes made do not constitute an abandonment of their former preferences but merely a realistic attitude and a logical conformance to the requirements of an emergency. Their emergency preservatives are still good preservatives, even though they may be less desirable in some respects than their preferred preservatives, to which they will probably return when that becomes practicable.

[Mr. Hunt then discussed the availability of other possible preservatives, including the chlorinated phenols, water gas tar, low temperature tars and creosotes, etc., as well as several preservative salts which possess varying degrees of merit.]

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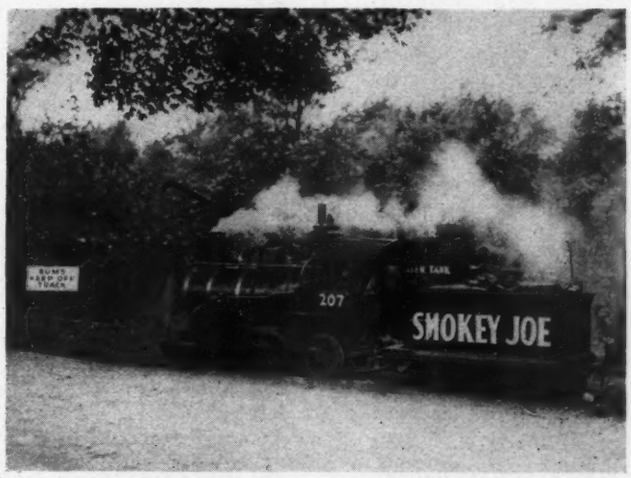


The Sole Locomotive of a Miniature Railroad Near Hartford, Conn., Stops to Take Water. The Line Is a Common Carrier

Diesel-Electric Locomotive Development

Progress in the design of electrical equipment for both large and small locomotives

IMPROVEMENTS in design of electrical equipment used on Diesel-electric locomotives and what these improvements mean to the railroads were described in two papers and subsequent discussion at the annual meeting of the American Institute of Electrical Engineers, held in New York, January 26-30. Abstracts of these papers and part of the discussions follow:

Better Large Locomotives

Gerald F. Smith of the Westinghouse Electric & Manufacturing Company, in a paper on "Progress in Design of Electrical Equipment for Large Diesel-Electric Locomotives, noted that during the last eight years, as the result of development of the Diesel engine, Diesel-electric locomotives have come into wide use for heavy switching, passenger and freight service. There has also been a rapid development in the electrical equipment going back about 15 years.

The primary function of the electrical equipment is to transmit the power from the engine to the rail, and also change the relation of engine to locomotive speed. In modern high-speed equipments, the weight of electrical equipment somewhat exceeds the weight of the Diesel engine with radiators, etc., and is of the order of 20 per cent to 25 per cent of the locomotive weight. This may appear to be out of proportion, but it must be realized that the propulsion output of the engine is all converted to electrical energy and then back to mechanical output at the rail over a very wide range of speed.

Prior to 1927, standard 600-volt, self-ventilated railway trolley type motors, designed for suburban and subway service, were used. About 1928, motors designed primarily for operation from limited power supply were introduced. These power plants were of 300 to 400 hp. capacity, with one generator and two motors. In 1932, 600-hp. equipments were introduced using semi-forced ventilated motors, Class B insulation, with multiple windings and four brush holders instead of the conventional two-circuit winding and two brush holders, and with wedges on the core and non-magnetic bands on the end windings, and with roller bearings. In 1936 a further increase to 900 engine horsepower was made. At present, motors are available which can use 1500 engine horsepower per pair of motors. These motors are only 17 per cent heavier than the motors used with a 400-hp. engine in 1928.

Increase in motor capacity has resulted from improvements which may be listed: (1) Increased peripheral speed of armature from 8,500 to 12,500 ft. per min.; (2) increased peripheral speed of commutator, from 7,000 to 10,000 ft. per min.; (3) forced ventilation—a definite supply of ventilating air from a source relatively free from snow, water, oil, brake-shoe dust and dirt of all kinds is provided; (4) better insulation and processes in applying the insulation—mica tapes and wrappers with a lower per cent of combustible material, glass and asbestos and improved sealing compounds excluding oil, moisture and air are used, thus permitting higher temperatures; (5) Micarta wedges capable of standing higher temperatures; (6) non-magnetic high-strength multilayer bands on the end windings; (7) multiple armature windings permitting higher speeds with low commutating voltage; (8) armature coils designed to reduce eddy-current loss; (9) roller bearings, and (10) better gearing.

One word of caution is necessary. Since the motor weight has not materially increased, the thermal capacity in proportion to motor capacity has materially decreased. Hence, much greater care must be used in applying motors to a given service to avoid overloads that produce high temperatures.

The capacity and speed of the main generators is determined by the capacity and speed of the engine. Compensating windings, often used on high-capacity generators, are not generally used on railway Diesel-engine generators. This is due to the space taken and the higher resistance of such windings. The main pole air gap is tapered to reduce the maximum volts between bars and also to reduce the load core loss.

Mechanical connection of the generator armature direct to the engine shaft gives a substantial rigid connection using the weight of the generator armature in place of an engine flywheel. The generator stator is also usually directly connected to the engine frame.

It has become general practice to drive auxiliary machines such as compressors, radiator fans and main motor fans, etc., from the engine. An auxiliary generator need be of only small capacity, sufficient to charge battery and supply power for headlights, cab-lights and miscellaneous small auxiliaries.

The differential exciter of special design has been developed to give full engine loading over a wide range of locomotive speed under usual conditions. To allow for unusual conditions and to secure the very maximum utilization of engine power, the field of the exciter is put under control of the engine governor. When the fuel rack exceeds a predetermined setting, the exciter field is decreased, and when the fuel rack goes below this setting the field is returned to its normal maximum value. This avoids overload on the engine and keeps the fuel rack at full load without sacrificing the inherent advantages of the simple differential exciter. By operating on the exciter field, the physical size of the device is kept low. Since the time constant of the exciter field is much more rapid than that of the main generator field, this does not slow up the operation.

For present high-speed passenger locomotives, electrical equipment is available with a weight between 20 and 21 lb. per engine horsepower, with continuous rated speed 33 per cent of maximum service speed of above 100 m. p. h. and with sufficient maximum tractive force to slip wheels at 33 per cent adhesion. For freight locomotives with double the number of motors per power plant, the weight per engine horsepower is between 30

and 31 lb. per engine horsepower, and the continuous rated speed 16 per cent of maximum rated speed.

Better Small Locomotives

In a paper on "Modern Electrical Equipment for Industrial Diesel-Electric Locomotives" Lanier Greer of the General Electric Company indicated that modern electrical equipment for industrial Diesel-electric locomotives (from 20 to 65 tons) is widely different in many respects from that used five or six years ago. New and improved high-temperature insulating materials and modern synthetic varnishes have been developed and are used extensively today. Also, new and improved methods of using these and the older materials have been developed. These, together with new design constants, have made possible a reduction in weight per horsepower transmitted with an improvement in the quality of the product.

The Diesel engine and generator are close-coupled and mounted as a unit, thus assuring proper alinement and, at the same time, reducing the space required for mounting on the locomotive. A new and improved method of generator excitation has been developed which assures positive control of the engine speed and power. The generator with its controlled excitation acts to electrically govern the engine at all speeds below that at which the mechanical governor begins to operate. It provides a very flexible transmission of power from the prime mover to the rail.

The modern traction motor has a cylindrical instead of a rectangular frame. It is a multi-pole instead of the conventional four-pole design. It is mounted integral with a double-reduction-gear unit which is completely enclosed in an oil-tight gear case. All bearings on the motor armature shaft and in the gear case are antifriction except those on the axle, which are sleeve bearings. All bearings in the gear unit are oil-lubricated with the same oil that lubricates the gearing. Both the high- and low-speed pinions are straddle-mounted to insure proper alinement of the gearing at all times.

Such locomotives are used in slow-speed switching service where high tractive force is most important. For this type of work double-reduction gearing with maximum reduction shows much better transmission efficiency than the conventional single-reduction gearing.

What the Improvements Mean to the Railroads

Robert W. Barrell of the General Electric Company made the following contribution to the discussion of Mr. Greer's paper:

Here are some facts illustrating exactly how the modern electrical equipment described by Mr. Greer's paper, together with the modern engine, very greatly affected the Diesel-electric locomotive within a short period of time.

In 1935 a 65-ton locomotive power plant consisted of a single 300-hp., 550-r. p. m. Diesel engine and generator with auxiliary generator. In 1940 there became available for such a locomotive a power plant unit consisting of a 190-hp., 1,800-r. p. m. Diesel engine and a generator developed especially for the purpose. This new engine-generator set was exactly one such as described in this paper. Two of the new sets were used in place of the former single set.

These are the facts in comparing the new locomotive with the old.

	Per cent
Increase in net hp. at the wheels	19
Decrease in total engine cost	71
Decrease in total generator cost	38
Decrease in total cost of power plant alone	65
Net decrease in power-plant cost when applied to locomotive	61

The net decrease when applied to the locomotive is less than the decrease in the total cost of power plant alone, because it was necessary to maintain the locomotive weight at 65 tons. Hence, steel ballast was added to offset the decrease in power-plant weight, and the ballast cost has been deducted from the saving.

The power-plant cost in the old locomotive represented 43 per cent of the total locomotive cost. Hence, it is to be noted that modernization of just the power plant alone brought about a cost reduction of 26 per cent in the overall locomotive cost. And this was accomplished while improving performance by an increase of 19 per cent in the net power.

The paper mentions several advantages of the modern traction motor with double reduction gearing. From a locomotive builder's viewpoint, one great advantage of such a motor is its flexibility in adapting it to several sizes of locomotives. This is well illustrated by a motor now in use which is actually being applied to as many as six sizes of locomotives, ranging from 25 to 70 tons. One, two, or four motors are used on a locomotive, depending on the weight. Also, any one of several gear ratios may be selected.

It is apparent, therefore, that such a motor makes possible a high degree of standardization, resulting in many benefits. Not only is there a standardization of the motor and items of control equipment but also many mechanical parts, such as wheels, axles, and motor suspensions, can be standardized to a large degree.

Apropos of the subject of this paper, some mention can be made of the generator and motor control. Such equipment, while a much smaller portion of the locomotive, nevertheless has played its part in bringing about cost reduction, simplification, and standardization.

One control item, the reverser, can be cited specifically as an illustration. There has been developed a direct-operated type of motor reverser, radically different in design, much simpler and lower in cost than former conventional types of reversers, which has proved to be a complete success for single-motor and two-motor industrial locomotives. An appreciable saving, simplification and standardization were thus realized over the conventional electro-pneumatically operated reverser with its master controller.

As stated in this paper concerning the propulsion equipment, it can likewise be said of the control equipment that new materials and methods have been developed and adopted which have made it possible to reduce weight and cost, and at the same time improve the quality of the product.

An interesting improvement recently incorporated in this type of modern generator and which is briefly referred to in Mr. Greer's paper is the engine cranking feature. It is still a common practice to use separate automotive-type geared starting motors with high-speed Diesel engines but it now has been proved that a cranking winding can be added to the generator with the important three-fold result of reduction in overall cost, increase in reliability, and simplification.

The idea of using the generator as a cranking motor is old and formerly commonplace. Its application to the modern high-speed equipment is a splendid example of the efforts to produce for industrial Diesel-electric locomotives machinery of the simplest and most rugged design.

It also seems in order to amplify the description of and give facts about the generator excitation and engine-control scheme.

A Diesel engine is inherently a constant-speed, con-

stant-power machine. The combination of traction generators and traction motors on a locomotive is not. Thus, the fundamental problem concerning the electrical equipment is to devise for this combination of dissimilar machines the most suitable scheme for utilizing the power of the engine.

On slow-speed switching locomotives it is obvious that perfect utilization of the engine can be sacrificed in favor of simplicity, ruggedness, and good accelerating characteristics. The excitation scheme described by Mr. Greer does exactly this. Without the use of complicated rotating devices, speed or torque control schemes, or special windings or separate exciters, a practical method of engine utilization and good locomotive acceleration is accomplished.

This method employs the inherent speed-torque characteristics of a Diesel engine together with the inherent characteristics of a simple shunt generator with but the minor modification of a small amount of separate excitation from the standard cranking battery. The price paid for this extremely simple scheme is very small in terms of loss of power utilization.

Actually the figures on the two commonest industrial locomotive engine sizes are as follows. At normal operating generator temperature, the maximum reduction in engine speed when operating on the full-throttle torque curve results in 10 per cent reduction in power on one engine and 7½ per cent reduction on the other. However, this maximum power reduction occurs at but one point in the full power utilization range. The actual integrated power reduction realized over only the utilization range is less than 5 per cent for the one and 3 per cent for the other. Since it is not necessary for the utilization to cover the entire speed-tractive-force range of these locomotives, the true integrated power reduction values realized at the wheels are found to be less than 4 per cent and 2½ per cent respectively.

Therefore, it can be said for these locomotives that the maximum power available at the wheels is but 2½ to 4 per cent less than it would be were a perfect power utilization scheme employed. But it should be observed that this reduction applies only to the possible maximum power obtainable at full throttle. In the usual switching service full throttle is used for but a small fraction of the work, hence the net result of this power reduction when measured in terms of work done is negligible. Surely, this simple and rugged design of modern electrical equipment for industrial Diesel-electric locomotives is well justified.

Buda Builds New Trucks

THE Buda Company has developed a small gasoline-powered unit for general use around shops, stores and freight houses where both speed and compactness are desired.

The new machine, known as the Buda Chore Boy, is 37 inches wide, and carries up to one-half ton of material. It is of three-wheel construction and can be turned in a radius of 7 ft. 3 in. It weighs 800 lb. and has a maximum speed of 15 m. p. h.

Buda "Chore Boy" with a Load of Rerailers

The drive is a four-cycle, air-cooled engine of 7.7 hp., which operates at the rate of 35 miles per gallon of gasoline. Magneto ignition is used for starting, and both brakes and power are controlled by foot pedals. The machine has a heavy duty friction drive with both forward and reverse speeds, and the brake is applied automatically the instant the operator leaves the seat. An electrically-welded steel frame with an anti-skid steel deck affords a loading space of 12.8 sq. ft. Both engine and mechanism are readily accessible from the top of the machine. The gas tank is mounted under the engine seat.

* * * *

Photo courtesy Florida East Coast

The "Champion" Makes a Stop at Hollywood, Fla., on the Florida East Coast

Norfolk Southern Emerges From Receivership

M. S. Hawkins heads new company operating 733-mi. property—Was co-receiver

Morris S. Hawkins

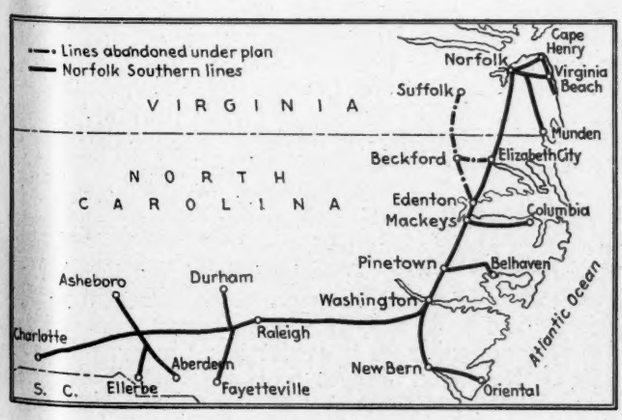
ON January 22 the newly-formed Norfolk Southern *railway* company announced that it had assumed control of the properties of the former Norfolk Southern *railroad* company, effective as of January 1, thereby ending a nine-year receivership. The road is the first Class I carrier to emerge from equity bankruptcy proceedings since the New Orleans Great Northern was merged with the Gulf, Mobile & Northern in May, 1933, and the first substantial mileage to come out since 1930, when the Alton was purchased at auction by the Baltimore & Ohio.* Morris S. Hawkins, co-receiver of the line since October 16, 1933, was elected president of the new company early in January and other officers were elected at a meeting of the board of directors in New York on January 21, as was reported in last week's *Railway Age*.

The former *railroad* was incorporated in 1910 as successor to the Norfolk & Southern railway company, the property of which was sold under foreclosure. In 1912 the N. S. acquired the property of the Raleigh, Charlotte & Southern which, with additions, gave it 296 additional route-miles, and in 1920 leased the 38-mi. Durham & South Carolina.

Shaped like an "L," with the short stem running north and south and the long east and west, the Norfolk Southern operates 733 mi. of first main track between Norfolk, Va., and Charlotte, N. C. The Northern division—Norfolk to Marsden—lies along a low-lying coastal area, sandy and swampy and cut by numerous wide, sluggish rivers, and inlets of Pamlico and Albemarle sounds. A number of short branches from the main line terminate at small ports on these streams. This division abounds in trans-marine trestles, one crossing Albemarle sound between Waddill and Macheys being six miles in length. Since these streams are improved for navigation at public expense and the two sounds are connected by a federal-maintained canal with Chesapeake bay, the road faces severe competition from water carriers in this area, which has increased since the advent of good roads in the area has encouraged truck-water transportation. The Western division runs from the coast to the interior of the state on a profile ascending gradually in westerly direction. This area is eminently suitable for the raising of diverse crops, and the hill area at the western end of the line still contains a substantial amount of good standing timber. Cotton and tobacco manufacturing on a large scale centers at cities like Durham, Charlotte and Raleigh which makes use of abundant water power available.

The road's freight traffic is well balanced, 55 per cent of the total originating on its own line in 1939. Interline freight is chiefly coal, sand and gravel and manufactured products in-bound, and tobacco, potatoes, peanuts and lumber. Total revenue freight tonnage moved in 1939, in order of importance, comprised products of mines, 38 per cent (gravel, sand and stone 24 per cent); manufactures and miscellaneous, 32 per cent; products of forests, 14 per cent; agricultural products, 12 per cent; animals 0.50 per cent; and merchandise (l.c.l.)

*A new company is shortly to take over the properties of the Wabash, the road having been sold at auction in December.



Map of Norfolk Southern Lines

2.88 per cent. Freight density is comparatively light; revenue ton-miles per mile of road were 419,965 in 1939. This compares with an average for all Class I roads in 1939 of 1,235,843. Average haul per ton is also low, being 138 mi. in 1939, compared with a national average of 350 mi.

History of the Receivership

Operating revenues of the Norfolk Southern began an uninterrupted decline as early as 1927. Traffic carrying relatively high rates and originating in small lots over a scattered agricultural area became an early prize of expanding truck transportation. Gross operating revenues declined from $9,567,021 in 1927 to $4,188,799 in 1932 and net income of $740,355 in 1927 became a net deficit of $1,103,406 in 1932. The property was placed in receivership on July 28, 1932, under direction of the federal district court for Eastern Virginia, and G. R. Loyall, former president, and L. D. Windholz were named co-receivers. Upon Mr. Loyall's retirement on October 16, 1933, M. S. Hawkins, assistant secretary and treasurer, was appointed operating trustee.

A reorganization plan was filed with the court in August, 1937, by committees representing most of the bondholders. This was approved in March, 1938; and reorganization managers were appointed. In September, 1939, the court approved the plan in substantially amended form and a new company—the Norfolk Southern *railway* company—was incorporated in Virginia on September 19, 1939. On March 10, 1941, the court signed the final decree of foreclosure and sale of the road and fixed an upset price of $2,000,000 for the property as a whole. At the door of the Princess Anne County Court House at 10:30 a. m., April 30, 1941, Re-organization Manager C. M. Shanks (vice-president, Prudential Insurance Company) tendered a bid of $2,000,100 for the road. On November 29, the Interstate Commerce Commission authorized the new company to issue securities as provided in the final plan, as amended. The federal court held the wind-up hearing on December 9 and the new company took over on January 22.

The new company has been authorized by the Interstate Commerce Commission to issue: (1) $368,000 of 10-year 4 per cent secured notes; (2) $3,918,000 of first mortgage 4½ per cent bonds, Series A; (3) $6,892,300 of general mortgage 5 per cent convertible income bonds and (4) 350,000 shares of no-par value common stock. Of the latter 69,508 shares are to be used to acquire the properties of the old company; 4,800 shares to be sold to the holders of stock-purchase warrants; 275,692 shares to be issued in conversion of income bonds.

Total capitalization of the new company will be $18,509,129, as compared with $38,652,408 of the old company. Fixed charges of the new company will be $296,300, as compared with $890,040 for the old company. Contingent charges of the new company, including sinking funds and depreciation, will be $550,697.

Securities of the old company will receive the following treatment: $1,655,000 outstanding Norfolk & Southern first mortgage 5's receive, per $1,000 bond, $1,100 first mortgage bonds; $50 scrip for income bonds and $8.33 cash. The $825,000 outstanding of Norfolk & Southern first general mortgage 5's will receive $450 first mortgage bonds, $550 income bonds and three shares of common stock. The $137,000 outstanding of Raleigh & Cape Fear first mortgage 5's will receive, per $1,000 bond, $1,000 first mortgage bonds and 3.16 shares of common stock. The $374,000 outstanding of Raleigh & Southport first mortgage 5's will receive, per $1,000 bond, $100 first mortgage bonds, $500 income bonds and 4.76 shares of common stock. The $164,000 outstanding of Aberdeen & Asheboro first mortgage 5's will receive, per $1,000 bond, $500 first mortgage bonds and $800 income bonds. The $11,604,000 outstanding Norfolk Southern first and refunding 5's will receive, per $1,000 bond, $100 first mortgage bonds, $500 income bonds and 4.8 shares of common stock. The $642,000 outstanding of Suffolk & Carolina first consolidated mortgage 5's will receive, per $1,000 bond, $350 first mortgage bonds; $100 income bonds and one share common stock. Holders of $16,000,000 outstanding common stock of the old company are allowed per share one common stock purchase warrant entitling purchase during a period of three years after date of consummation of the plan of 3/100th of a share of common stock of the new company at a price of $10 per share during the first two years and $12.50 per share the third year.

The receivers' chief concern on taking over the road was to reduce losses on unremunerative branch lines. In November, 1935, the N. S. terminated its lease of the state-owned Atlantic & North Carolina, extending 95 mi. between Goldsboro and Morehead City, thereby relieving itself of high rental and operating costs. Passenger service on all branch lines of the road was discontinued in 1938, and the subsidiary Norfolk Southern Bus Corporation extended to serve these routes. Operating buses over 438 mi. of highway and trucks over 280 mi., this wholly-owned affiliate had operating revenues of $395,311 in 1940, as compared with $147,458 in 1933. For the first 10 months of 1941, revenues were 60 per cent more than the corresponding figure for 1940.

In 1935, light-weight gasoline "rail-buses" replaced electric interurban cars, and steam locomotives, electric motive power, on the 41-mi. "electric division" between Norfolk and Virginia Beach and $280,544—representing retirement of electric facilities on the division—was charged to the 1938 income account. In April, 1941, the receivers sought I. C. C. Authority to reduce rental on the leased Durham & South Carolina branch. The amended reorganization plan excludes the Suffolk & Carolina division, except for terminal properties at Edenton and Elizabeth City and the 47-mi. between Suffolk, Va., and Edenton and the 20 mi. between Beckford junction and Elizabeth City were abandoned in 1940. The terminal at Suffolk was sold to the Virginian for $65,000.

All of the freight cars on hand at the beginning of the receivership have been retired and scrapped, with the exception of 190 cars. For partial replacement of this equipment, the receivers purchased 500 box cars in 1935; 25 automobile cars in 1936; 40 flat cars (equipped for handling pulpwood) and 12 caboose cars in 1940 and 253 box cars, 50 hopper cars and 50 gondola cars in 1941. Early in 1940 the receivers placed in service five fast, powerful steam freight locomotives having a tractive effort about 50 per cent greater than the heaviest locomotive previously in service. A large number of the locomotives on hand at the beginning of the receivership were scrapped and sold. At the close of November, 1941, the ratio of bad order freight equipment to total ownership was 1.06.

During the period of receivership shops of the road were also modernized by the purchase of new shop machinery and tools and the roadway was improved for the operation of more powerful locomotives and faster trains. New steel bridges replacing lighter structures were installed at Elizabeth City and Hertford and steel bridges at other points strengthened. Heavier rail was

installed on 146 mi. of main track between Norfolk, Va., and Charlotte, N. C., and on 86 mi. of branch lines and yard and passing tracks. Crushed rock ballast was placed on 178 mi. of main line track.

The improvements made to the physical condition of the property, together with the discontinuance of some unprofitable trackage and train service, contributed to a better operating performance, as indicated by the following comparison of the year 1933 (the first full calendar year of the receivership) with the year 1940:

	1933	1940
Gross ton-miles per freight train-mile	785	1,153
Net ton-miles per freight train-mile	299	461
Gross ton-miles per freight train-hour	11,229	15,651
Car-miles per train-mile	23.9	29.3
Car-miles per car-day	21.8	46.1
Coal consumed per 1,000 gross ton-miles	124	99

The territory which the road serves appears to have great possibilities. The trend of industrialization of the South is likely to affect territory along its Western division, while continued encouragement of truck-crops and tobacco may serve to increase its high-rated agricultural traffic.

Morris Seymour Hawkins has been in the railroad business since 1898 and has been connected with the Norfolk Southern since 1910. He was born on January 21, 1882, at Norfolk, Va., and entered railroad service in 1898 as clerk in the office of the general agent of the Southern at Norfolk. He served in various clerical positions including chief clerk to general agent and to superintendent of the Norfolk division of that road until 1910, when he went with the Norfolk Southern as secretary. In 1912 he became assistant to president and secretary and in 1918 he became assistant to federal manager of the Norfolk Southern and the Virginian. During 1919 and 1920 Mr. Hawkins was federal manager of the Norfolk Southern, the Kinston-Carolina and the Carolina Railroad. From the latter date until 1933, he was assistant to president and secretary of the Norfolk Southern and secretary of the Kinston-Carolina and Carolina railroads. He has been co-receiver of the Norfolk Southern since 1933 and since November, 1937, has also served as president of the Norfolk & Portsmouth Belt Line.

An Authoritative Book On Air Transportation

MOST if not all books on aviation up to now have been written either by technicians or enthusiasts. "Commercial Air Transportation,"* by Dr. John H. Frederick, professor of transportation and industry at the University of Texas' School of Business Administration, is different. Its author is a student well-grounded in the economic principles of transportation; is well acquainted with the older agencies thereof,—including railroads; and, to judge by this book, may well become the Arthur Hadley or William Z. Ripley of commercial air transportation.

Any foresighted railroader must have in his mind scores of questions about this newest rival of his industry. If he has shared this reviewer's experience, he has thus far been unable to find satisfactory answers to most such questions in the literature so far available. But that is all past now. All, or almost all, the answers are in Dr. Frederick's book. How many miles does a large transport plane fly a year? About 250,000, according to the chapter on "Development of Air Transportation." How many people work for the air lines? Nearly 50,000; and, peculiarly enough, while the number of pilots has increased, the number of aircraft in transport use has diminished in recent years, due to a great increase in flight-hours per unit. The entire number of transport planes as of June, 1940, had a fixed seating capacity equivalent to that of only 46 eighty-passenger railroad coaches. Due to intensive utilization and high speeds, however, passenger-miles performed by these planes make a far different showing in comparison with railroads. Only seven railroads and the Pullman Company had greater passenger revenues in 1940 than American Airlines and only eight had more than United Air Lines.

The youthful air transport industry has already achieved a remarkable corporate maturity. For example, the number of common carrier airlines has steadily *decreased* from 47 in 1930 to 17 at the close of 1941, and five of the latter dominate the industry. Furthermore, the present attitude of the Civil Aeronautics Board tends to "freeze" this status or further integrate the present systems. Since opening of a new air line involves heavy government expenditures for beacons, radio waves, etc., the Board is loath to grant authority for new routes except on overwhelming evidence of public need. And when it does grant such authority, it prefers to allocate the route to an existing carrier. Since establishment of the Board, no new company has obtained such authority, on the grounds that no adequate operating organization had been set up. But since the latter cannot be financed or established unless there is fair assurance of a certificate, new operators face an insoluble dilemma.

Hence, the 10-year-old airline industry seems already to have achieved integration and a stable division of the field which the 100-year-old railroad industry has not been permitted to attain. The author does not approve of this established policy of the "airlines' I. C. C.," but recognizes, nevertheless, its significance to the industry. Here is a case of an industry which is *naturally* competitive, but which has been brought to a high degree of monopoly by deliberate government policy. By contrast, railroads—which are *naturally* semi-monopolistic—are forced by government perversity to retain a high measure of competition. Politics in dealing with transportation pays scant heed to economics.

The chapter on airline financing is especially informative. Airline finance is simplicity itself—common stock for administration and ground-plant capital; equipment trusts for flying stock. At the end of 1940, no airline had long-term funded debt, and only three had preferred stock outstanding. The author believes these methods will continue. He also probes possible factors—good and bad—on airline earnings and suggests how the investor may analyze the financial position of individual companies. The chapter on economics of the industry is a convenient handbook for comparison with the railroad industry, since the body of statistics on air transport is now almost as complete as that on railroads and in many cases significant comparisons may be drawn therefrom. It would be informative, for example, to contrast the author's two-page breakdown of expenses of a typical airline with the comparable expense items of a large passenger-carrying railroad. The former would probably show a disproportionate amount of expense for traffic and advertising and for depreciation, while the latter would show heavy station expenses and taxes. It is, of course, merely a political quirk which decrees that a railroad must own and pay *ad valorem* taxes on the surface of the earth which it traverses—whereas planes

* Published by Richard D. Irwin, Inc., Chicago. 493 pages. Price $4.

and ships are free to ply elements which are uncapitalized and untaxed.

Perhaps the most significant chapters in the book are those which cover the growth and present characteristics of air passenger, mail and express traffic, with detailed cost and rate figures and comparisons with railroads and buses. Tables of comparable fares are expanded to include the factor of passenger's "time costs," i. e., a value is assigned to each hour of travel time according to various salary levels and the money value added to the costs of riding via plane, train or bus, respectively, on the assumption that the passenger rides during business hours and wastes his time en route. If you don't think there is much logic in this assumption, you nevertheless cannot deny that it is an effective sales argument with the unreflective type of business man, who wanted to travel by air anyhow—and welcomes an excuse to justify the higher fares in his expense account.

The chapter on selling air travel describes the successful technique of the airlines in soliciting traffic from individual business firms—with suggested procedures on overcoming prejudice, inertia and the opposition of "the little woman at home." The book points out that *the air "travel card" plan accounts for more than one-half of total passenger revenues and not only increases traffic by offering a 15 per cent discount to large purchasers but greatly simplifies and aids traffic solicitation by enabling "account servicing."* The author presents a complete breakdown of account statistics, with average billings per contract, etc. He also describes the so-called "Cleaves plan," which would build up full plane loadings through the sale of "tourate" tickets at current rail coach fares which would be honored only when available space is not used up by first-class ticket-holders. This appears to be a clever "pick-and-choose" device, calculated to give the air lines very nearly 100 per cent loads in both directions while increasing the disproportionate empty mileage and "stand-by" expense already borne by the railroads.

The chapters on air express and air cargo (express and freight carriage in the air are essentially the same thing, according to the author) deal in large measure with the Railway Express Agency, since this railroad-owned organization has been the chief factor in this development. It is perhaps not generally known that the predecessor American Railway Express Company made one of the first experiments in scheduled air carriage of property in 1919 when it sent 1,100 lb. of express from Chicago to New York. The first agreement for R. E. A. pick-up of air express shipments was made in 1927. Also described are the operations of Air Express Corporation and General Air Express, former competitors organized by airlines to avoid using R. E. A. services.

The author is not happy about the present air express set-up, blaming both the Agency and the airlines for lack of promotion. In this connection he writes: "It is an acknowledged fact that the airlines have not been particularly anxious to put much effort into developing air express. So many unsuccessful attempts have been made in the past to develop traffic that most airline officials have been disillusioned regarding its immediate value. Furthermore, the problems of developing passenger traffic have been immense, and the airlines have not wanted to accept the responsibility of developing an express service of which the ground functions, so necessary for successful operation, were outside their interest and experience."

The future of air cargo or express he sees as lying in the development of (1) a type of plane solely for this service having both capacity and speed; and (2) rates on a mileage scale which will move the traffic, coupled with a very simple classification, commodity rates to be used for shipments moving in big volume. Lest anyone scoff at the load capacity of a plane, the author presents a hypothetical study showing that by reason of high speeds, five cargo planes will do the work of 40 large tractor-trailer trucks in transporting 800 tons of freight in two weeks between New York and Miami. Present costs per-ton-mile are high, principally because the planes are designed for passenger carriage—but the discovery of new methods in the heavy plane production of this war and flying of large cargoes now performed by the Army will, in the author's opinion, greatly depress these costs. Dr. Frederick is opposed to the railroads or trucks going into the air-freight business, and holds that the present airlines are "the logical carriers of air cargo."

At the rear of the book there appears a valuable bibliography of the best articles, reports and books on air transportation; a handy digest of the Civil Aeronautics Act of 1938 and a summary of the main provisions of the R. E. A.'s contract with the airlines for handling air express.

New Books...

Proceedings—47th Annual Meeting, American Association of Railroad Superintendents. 275 pages. F. O. Whiteman, Secretary, Dearborn Station, Chicago.

Instead of the customary paper-back, non-illustrated volumes, the proceedings of the 1941 convention of the Superintendents' Association have been issued in an attractive, illustrated, cloth-covered book, suitable for a permanent reference library. The book contains 11 addresses by railway authorities delivered at the convention, plus eight informative committee reports and the complete discussion from the floor. The committee reports include the following pertinent and topical subjects: The cause and cure of rough handling of cars in terminals and on line; the superintendent's responsibility for L. C. L. traffic; the selection and training of a competent yard force; operating aspects of high-speed passenger service; operation aspects of maintenance of way activities; the superintendent's responsibility for car hire; expediting the handling of waybills and car records at terminals and interchange points; practical means for securing compliance with operating rules. The book is an important and useful addition to any operating man's library.

Bonanza Railroads, by Gilbert H. Kneiss. 148 pages. 10 in. by 6¾ in. Bound in cloth. Published by the Stanford University Press, California. Price $3.

This book actually comprises five separate histories of five early railroads of California and Nevada—the Sacramento Valley (now part of the Southern Pacific's Placerville branch); the San Francisco & San Jose (now part of the Southern Pacific's Coast line); the Virginia & Truckee; the Eureka & Palisade (abandoned); and the Nevada Central (abandoned). All of these roads have in common the fact that they were built in the hectic era of exploitation of mineral wealth—the latter four being built primarily to serve mines—and that their histories are redolent of the romance of gold- and silver-rush days.

The author, who was technical director of the pageant, "Railroads on Parade," at the New York World's Fair, is a tireless railroad historian and was instrumental in preserving a number of old-time locomotives of these roads, has a gift for setting down history as well as finding it. His work is quite evidently the fruit of conversations with the surviving officers and employees of these roads and personal excursions over their rights-of-way, habits of work which fight off any tendency to be dry-as-dust. Hence the work is exceedingly strong in anecdotes, which will merit wide retelling.

The 32 full-page photographs are new and original and well worth the price of admission. The cover and drawings throughout the book are the attractive work of Arthur Lites.

NEWS

Eastman Insists He Is No McAdoo

ODT will just be big brother to the carrying trade, if it hits the ball

Director Joseph B. Eastman of the Office of Defense Transportation, addressing the American Transit Association at Chicago on February 4, said that, under the ODT set-up, "the carriers are given under, so to speak, their own steam, the opportunity," with the aid of the Office, to "achieve maximum utilization of the domestic transportation facilities of the nation for the successful prosecution of the war." He is not, he said, either "a second McAdoo nor yet a transportation Czar." At the same time however, Director Eastman added, "I am given the duty of close surveillance of what they do, of developing plans to safeguard the future" and of recommending to the President "any further action that may seem requisite."

Mr. Eastman also stressed his duty "of undertaking to assure the carriers the tools and materials which they will need" and "of actually directing traffic movements if need be."

He then went on to review the shortage in local transportation caused by closing down on the manufacture of private automobiles and the sale of tires for civilian use. "It is a natural thought," said Mr. Eastman, "that much of this traffic can now be thrown back upon the rails, and in particular that the railroads can establish extensive commutation service to and from great defense plants . . . . The fact is that the railroads will have a very difficult problem quite apart from any such new service."

The Director went on to explain the shortage of passenger equipment and the refusal of the authorities to permit any more of it to be built—with the corollary that "shoe leather will have to take the place of rubber" and "leg power" will have to be substituted for "gaspower." However, he did see some expedients which might be be adopted, particularly in local areas. "Staggered hours" for business is one such. Another is to start schools at different hours from those when the business day begins, so that school buses can be used for transportation to places of work.

Replacing trolley cars with buses has been stopped for the time being. Sightseeing buses will be diverted to more necessary service. "Truckaways," ordinarily used to haul pleasure cars from factory to dealer, can be turned into buses, of a sort. Considerable is possible in the way of filling up the private automobiles which remain in service, transporting employees to and from industrial jobs.

In closing his remarks, the Director again adverted to the question of securing necessary materials for suppliers of transport equipment. "There is," he said, "a distinct danger that the supply of available materials and the plants which manufacture transportation equipment will be diverted or converted to war production purposes, to an extent that will threaten the efficient functioning of transportation. That must not be allowed to occur, because it will set back the whole war effort." By the middle of February, Mr. Eastman revealed, his Office is to "submit to the War Production Board its estimates of the requirements of the entire transportation industry for materials and equipment during the last nine months of the year."

Conferees on Freight Forwarder Bill Begin Meetings

Conferees appointed last November to iron out the differences between the Senate and House versions of S.210, the freight forwarder regulation bill, finally got together on January 29. The conferees held three meetings last week and resumed their sessions on Wednesday of this week.

Senate conferees are: Senators Wheeler of Montana, Truman of Missouri, Hill of Alabama, Democrats, White of Maine, and Reed of Kansas, Republicans. House conferees are Representatives Lea of California, Crosser of Ohio, South of Texas, Patrick of Alabama, Democrats, Wolverton of New Jersey, Holmes of Massachusetts, and Reece of Tennessee, Republicans.

Frisco Wins Suit Against Brokerage Firm

Settlement of a suit brought by trustees of the St. Louis-San Francisco for the purpose of recovering $650,000 from Speyer & Co., a New York brokerage firm, and N. E. Brown, former chairman of the board of the railroad, was approved by the district court on January 30. The settlement provides for the retention of 25,000 shares of stock in the Gulf, Mobile & Northern by the Frisco and payment to the Frisco of $75,000 in cash. The suit grew out of the purchase by Speyer & Co. of the G. M. & N. stock at the direction of the Frisco board in 1929-30. The Frisco trustees charged that Speyer & Co. held the stock and that when the Frisco took the shares over in December, 1930, they had shrunk in value from $950,000 to $300,000.

False Opinions About Transport

Smith finds error in overlooking air progress and in belief prosperity will last

Addressing the Traffic Club of Baltimore, Md., this week Nelson Lee Smith, chairman of the Board of Investigation and Research created by the Transportation Act of 1940, undertook to expose three "widely-entertained fallacies" with respect to transportation which the Board has encountered in the development of its work. The "fallacies" are the thought that "transportation is fixed in the forms we know best;" the "mistaken belief" that the present prosperity of transport agencies has finally solved any major transport problems; and the thought that "the changes now in progress are temporary, and that, once the war ends, the transportation system will revert to the conditions of 1938 or 1939."

With respect to the first, Mr. Smith listed the transportation forms "we know best" as the railroad, the motor carrier, and the waterway. He conceded that in recent years an increasing number of people have come to recognize the importance of air and pipeline transportation, adding, however, that it is still "hard to rid ourselves of the idea that the airplane and the pipeline are adjuncts to, rather than integral parts of, the transportation system of the nation." Thus Mr. Smith suggested that his audience "think of modern transportation in terms of the statistics of the past five years, forgetting the century of experience before that date." Meanwhile, the Board in its research "will not forget the past and will draw from it such lessons as appear."

"But a break has come, and we must recognize it," Mr. Smith went on. "The service which the railroads will perform in the future is not just the service which they have performed in the past. The same is true of trucks and passenger motor vehicles. And the future of air transportation is now to be found in the experimental laboratory and on the drafting table. There will be developments in the next 10 years—and of this I am certain—which will remove forever the decade of the 1920's as a comparative measure for revenues, for equipment, and for traffic."

As to the "second fallacy," i.e., "the mistaken belief" that present prosperity has solved all transport problems, Mr. Smith

(*Continued on page 352*)

Depreciation — You Take or Leave It

But if carriers want to figure fixed property charges here is how to do it

Accounting rules covering optional depreciation accounting for roadway and structures have been modified by the Interstate Commerce Commission in such a way as to substitute the group plan for the unit plan of accruals. Although the order, dated January 19 with a January 1 effective date, leaves fixed property depreciation accounting optional, it nevertheless looks like a preview of what the long-pending mandatory order may be when it is issued to go into effect on January 1, 1943.

The change from the unit plan to the group plan is expected to appeal to railroads (especially those emerging from reorganization) which want to get their fixed-property depreciation accounting under way at this time. Under the unit plan, depreciation was accrued for each individual structure which a carrier might desire to depreciate, i. e., it might accrue depreciation for one station but not another. Under the group plan, accruals are at a composite rate covering all units of a primary-account group such as "station and office buildings." This contemplates that a carrier would no longer be free to accrue depreciation on selected station units—it would either have to adopt or reject depreciation accounting for the "station and office buildings" group as a whole.

For the purposes of the group plan the following primary accounts under road and equipment general account I, Road, are classed as "depreciable" accounts: 5—Tunnels and subways; 6—Bridges, trestles and culverts; 7—Elevated structures; 8—Ties; 9—Rails; 10—Other track material; 13—Fences, snowsheds and signs; 16—Station and office buildings; 17—Roadway buildings; 18—Water stations; 19—Fuel stations; 20—Shops and enginehouses; 21—Grain elevators; 22—Storage warehouses; 23—Wharves and docks; 24—Coal and ore wharves; 26—Telegraph and telephone lines; 27—Signals and interlockers; 29—Power plants; 31—Power transmission systems; 35—Miscellaneous structures; 37—Roadway machines; 44—Shop machinery; 45—Power plant machinery.

Separate composite annual depreciation rates, the order said, shall be used in computing depreciation charges for each primary account covering depreciable property on which the carrier elects to accrue depreciation. The percentage rates "shall be based on the estimated service lives of the road property developed by a study of the carrier's history and experience and such engineering and other information as may be available with respect to future conditions." Until such estimates have been computed the carriers are to use percentage rates obtained from the Engineering Section of the Bureau of Valuation.

Meanwhile the classification of operating expenses is modified by canceling some 27 of the present depreciation accounts and substituting in lieu thereof two accounts as follows: 266, Road Property—Depreciation; and 305, Shop and Power-Plant Machinery—Depreciation. The latter is to include the depreciation charges applicable for all classes of property, the cost of which is includable in accounts 44, Shop machinery, and 45, Power-plant machinery. The former is to include the depreciation charges applicable for all other classes of depreciable fixed property. Finally, the text of balance sheet account 775, Accrued Depreciation—Road, is modified to bring it into line.

Hearing February 17 on Pullman Fare Increase Application

The Interstate Commerce Commission has set February 17 as the date for hearing in Washington, D. C., on the application of the Pullman Company for authority to increase by 10 per cent its sleeping and parlor car rates. Commissioner Porter and Examiner Koch will sit in the proceeding which is docketed as Ex Parte No. 150.

Automatic Block Signals Installed on National of Mexico

Automatic block signals have been installed between Mariscala and La Griega, a distance of 20.5 miles, on the Queretaro division of the National Railways of Mexico. It is a single track line which handles all of the traffic that moves over the old National Railway and the Mexican Central north of Mariscala.

President Signs Two Bills

The President has signed S. 2204, the bill which will extend through the shipping season of 1942 the existing law authorizing vessels of Canadian registry to transport iron ore on the Great Lakes between United States ports. The President has also approved H. R. 6263 which authorizes him to take over the wire communications of the country in time of war or threatened war.

Accounting Classification

The Finance, Accounting, Taxation and Valuation Department of the Association of American Railroads has on the press a new 1942 edition of the Interstate Commerce Commission's Uniform System of Accounts for Steam Railroads, and copies will be available for distribution on or about March 1, according to a recent announcement from A.A.R. Vice-President E. H. Bunnell.

The 1942 edition will incorporate all of the changes made effective January 1, 1942, as well as all those contained in prior orders issued by the I. C. C. It has been verified by the Bureau of Accounts. It will be bound in a paper cover similar to the 1941 edition. However, in response to numerous requests, a limited number of copies prepared in loose-leaf form and punched for six one-inch ring binders will be available. The price for either the bound volume or the punched loose-leaf copies is 30 cents per copy to railroads and employees thereof and 60 cents per copy to others. Orders should be directed to E. R. Ford, secretary, Accounting Division, Association of American Railroads, Transportation Building, Washington, D. C.

Why Federalize T. P. & W.—McNear

Asks White House if Govt. would take over road just to spread featherbedding

"We do not believe our government will want to take over the Toledo, Peoria & Western merely to force upon it a lot of wasteful featherbed rules," George P. McNear, Jr., president of that railroad, wired Joseph B. Eastman, director of the Office of Defense Transportation on January 31, following reports to the effect that D. B. Robertson, president of the Brotherhood of Locomotive Firemen & Enginemen, and A. F. Whitney, president of the Brotherhood of Railroad Trainmen, had requested President Roosevelt to take possession, control and management of the railroad. The action taken by the brotherhoods on January 27, in this controversy which resulted in the calling of a strike on December 28, follows the granting of an injunction by the federal court at Peoria, Ill., on January 19 which limits picketing by these brotherhoods. It also follows conferences held with employees and management by a three-man United States conciliation service panel on January 23 and 24.

Mr. McNear's telegram to Mr. Eastman was in part as follows: "Local newspapers quote a telegram purportedly sent to President Roosevelt by Brotherhood Presidents Robertson and Whitney on January 27 again asking that President Roosevelt take possession, control and management of this railroad. We assume that any such proposal would be referred to you and therefore beg to advise you concerning our present situation. With the exception of overhead perishables and livestock, we are now handling all classes of traffic, including all war materials, expeditiously and have all the experienced men we need for our operations. We are now operating ten trains daily, compared with eleven or twelve in October, 1941. Our new schedules give rates of pay which average higher than so-called standard rates and they also provide for greatly improved operations and permit more effective utilization of manpower. They carry out the suggestions made by the President's Emergency Board of 1938. The soundness of our new schedules has already been demonstrated. Apparently Robertson and Whitney feel they have sufficient political influence to force us to accept so-called standard rules, which would mean that we would be required to assume grossly wasteful practices, operate inefficiently, hire 83 men to do the work formerly done by 55 men and be saddled with an archaic measure of a day's work that originated more than 50 years ago. All of this is utterly unreasonable, fundamentally unsound and inconsistent with what is needed to win the wars in which we are now engaged.

"With reference to that portion of Robertson's and Whitney's wire relating to the alleged existence of a local civil war, no civil war exists on this railroad and operations are proceeding in good shape. Ap-

(*Continued on page 353*)

How a Carrier Becomes Common

Commission reveals how to tell contract variety from the public-hire kind

Reporting on reconsideration of the Craig case (No. MC-5724), the Interstate Commerce Commission has undertaken to draw more clearly the line of demarkation between common and contract carriers under the provisions of the Motor Carrier Act. The report affirms a prior finding of Division 5 to the effect that the Transportation Act of 1940's amendments to the Motor Carrier Act's definitions of common and contract carriers did not change the basic conception upon which they were based originally, or place any given carrier after the amendments in a class different from that in which it would have fallen before the amendment.

Also, the commission went on to amplify its previous pronouncements on matter, especially those of the Pregler case, 23 M. C. C. 691. In other words, the commission still holds that "the fact or not of a public holding-out remains the final or ultimate test of common carriage." It adds, however, that "the problem still remains of determining in a given case whether there is, or has been, a public holding-out." It therefore sought among the secondary tests "a common element or characteristic representing the essential opposite of a *public* holding out, the presence or absence of which will establish or negative a *public* offer."

"Careful analysis," the commission goes on, "demonstrates, we think, that consistently with our conclusion in the *Pregler case*, and the prior decision in the instant proceeding, this common feature is *specialization*, either in the nature of the physical operation, or in respect of the shippers served, without some showing of which contract carriage cannot be found to exist." Later on the commission has this to say: "The formulation of a practicable and satisfactory test requires that the differences in holding out between a common and contract carrier service be reinforced by emphasis on individuality and specialization of the service in the case of a contract carrier as contrasted with the service to the general public rendered by a common carrier. The specialization which we have in mind may consist in the rendition of other than the usual physical services for the purpose of supplying the peculiar needs of a particular shipper . . . Or it may consist of nothing more than the devotion of all of a carrier's efforts to the service of a particular shipper, or, at most, a very limited number of shippers under a continuing arrangement which makes the carrier virtually a part of the shipper's organization."

With respect to Craig, the commission affirmed Division 5's finding that the applicant is a common carrier. It did, however, reopen the case insofar as certain operating rights sought by the applicant were denied. Craig's operations are between points in Illinois, Indiana, Kentucky, Michigan, Missouri, Ohio, and Pennsylvania.

Separate expressions came from Chairman Eastman, concurring, and Commissioner Lee, concurring in the result. Commissioners Porter and Splawn agreed with Lee; while Commissioner Patterson, also concurring in the result, was not opposed to the general principles set forth in the majority report. Commissioner Johnson's concurrence in the result was noted, while Commissioner Aitchison did not participate. Chairman Eastman said that in his opinion the majority report had corrected a deficiency in the discussion embodied in the Pregler case. Commissioner Lee agreed that Craig is a common carrier, but he said the majority report "has the approval of only a minority of the commission"; and he disapproves many of the statements therein.

Western Railway Club Holds "Army Night"

The regular monthly meeting of the Western Railway Club, held Monday evening, February 2, at the Hotel Sherman, Chicago, was devoted to "Army Night", the honor guest and principal speaker being J. E. Barzynski, brigadier general, Q. M. C., Commanding General of the Chicago Quartermaster Dept. The general gave an interesting description of how the quartermaster corps functions and what the railroads have done to co-operate with this important branch of the army. Following the general's address, an instructive motion picture "Defense for America" was shown.

Representation of Employees

Results of recent elections in representation-of-employees cases have been announced by the National Mediation Board. On the Central of New Jersey the cooks, dishwashers, waiters, bartenders, countermen and porters chose the Joint Council Dining Car Employees' Local No. 370, Hotel and Restaurant Employees International Alliance, A. F. of L., as their representative for purposes of the Railway Labor Act.

In another case on the Norfolk Terminal the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees won the right to represent the clerical, office, station, and storehouse employees.

1941's Net Income Was $500,545,671

Net railway operating income was $999,502,930—a 3.79 per cent return

Class I railroads of the United States in 1941 had an estimated net income, after interest and rentals, of $500,545,671, according to the Bureau of Railway Economics of the Association of American Railroads. The 1940 net income of those roads was $191,050,215.

Net railway operating income, before interest and rentals, of the Class I carriers in 1941 amounted to $999,502,930, or a return of 3.79 per cent compared with $682,543,218 or 2.61 per cent in 1940, and $868,719,483 or 3.36 per cent in 1930.

Operating revenues in 1941 totaled $5,346,699,998, compared with $4,298,001,598 in 1940, and $5,280,234,535 in 1930, an increase of 24.4 per cent in 1941 above 1940, and 1.3 per cent above 1930. Operating expenses amounted to $3,664,175,018, compared with $3,090,173,137 in 1940, and $3,931,043,991 in 1930—18.6 per cent above the former, but 6.8 per cent below 1930.

Class I roads in 1941 paid $546,071,034 in taxes, the greatest amount in any year on record. Their tax bill in 1940 was $396,623,016 and in 1930 it was $348,536,962. For December, their taxes amounted to $33,606,345, an increase of $6,797,495 or 25.4 per cent above December, 1940. Twenty-eight Class I roads failed to earn interest and rentals in 1941 of which seven were in the Eastern district, four in the Southern district, and 17 in the Western district.

Class I roads in December, 1941, had an estimated net income of $55,643,010 compared with $51,078,421 in December, 1940. Those same roads in December had a net railway operating income of $80,548,631 or 4.33 per cent, compared with $78,850,744 or 4.27 per cent in the same month of 1940 and $48,505,431 or 3.06 per cent in the corresponding month in 1930.

Gross for December total $479,560,154 compared with $381,936,980 in December, 1940, and $373,652,000 in December 1930. Operating expenses total $352,531,871 compared with $266,148,818 in the same month

CLASS I RAILROADS—UNITED STATES

	1941	1940	1930
Month of December			
Total operating revenues	$479,560,154	$381,936,980	$373,652,000
Total operating expenses	352,531,871	266,148,818	294,575,875
Operating ratio—per cent	73.51	69.68	78.84
Taxes	33,606,345	26,808,850	19,891,622
Net railway operating income (Earnings before charges)	80,548,631	78,850,744	48,505,431
Rate of return on property investment	4.33	4.27	3.06
Net income, after charges (estimated)	55,643,010	51,078,421	*
Twelve Months Ended December 31			
Total operating revenues	$5,346,699,998	$4,298,001,598	$5,280,234,535
Total operating expenses	3,664,175,018	3,090,173,137	3,931,043,991
Operating ratio—per cent	68.53	71.90	74.45
Taxes	546,071,034	396,623,016	348,536,962
Net railway operating income (Earnings before charges)	999,502,930	682,543,218	868,719,483
Rate of return on property investment	3.79	2.61	3.36
Net income, after charges (estimated)	500,545,671	191,050,215	*

* Net Income not reported monthly prior to 1932.

of 1940, and $294,575,875 in December, 1930.

Class I roads in the Eastern district in 1941 had an estimated net income of $275,426,566 compared with $163,774,284 in 1941. Those same roads in 1941 had a net railway operating income of $489,852,031, or a return of 3.98 per cent, compared with $376,023,679 or 3.10 per cent in 1940 and $438,492,623 or 3.75 per cent compared with 1930.

Gross in the Eastern district in 1941 totaled $2,642,982,063, an increase of 22.8 per cent compared with 1940, and 0.9 per cent compared with 1930. Operating expenses totaled $1,801,695,797, an increase of 19.6 per cent above 1940, but a decrease of 7.8 per cent under 1930.

Class I roads in the Eastern district for December had an estimated net income of $25,777,401 compared with $24,166,058 in December, 1940. Net railway operating income amounted to $40,177,656 compared with $40,799,271 in December, 1940, and $21,936,644 in the same month of 1930.

Class I roads in the Southern district in 1941 had an estimated net income of $76,936,747 compared with $16,691,437 in 1940. Those same roads in 1941 had a net railway operating income of $138,673,395, or 4.35 per cent, compared with $81,939,907 or 2.57 per cent in 1940, and $88,405,629 or 2.68 per cent compared with 1930.

Gross in the Southern district in 1941 totaled $698,242,859, an increase of 28.1 per cent compared with 1940, and an increase of 8.9 per cent compared with 1930. Operating expenses totaled $472,968,083, an increase of 16.9 per cent above 1940, but a decrease of six per cent under 1930.

Class I roads in the Southern district for December had an estimated net income of $10,335,761 compared with $7,960,772 in December, 1940. Net railway operating income amounted to $12,516,179 compared with $12,177,295 in December, 1940, and $8,768,588 in the same month of 1930.

Class I roads in the Western district in 1941 had an estimated net income of $148,182,358 compared with $10,584,494 in 1940. Those same roads in 1941 had a net railway operating income of $370,977,504, or 3.41 per cent, compared with $224,579,632 or 2.08 per cent in 1940, and $341,821,231 or 3.14 per cent in 1930.

Gross in the Western district in 1941 totaled $2,005,475,076, an increase of 25.3 per cent compared with 1940, but a decrease of 0.7 per cent compared with 1930. Operating expenses totaled $1,389,511,138, an increase of 17.8 per cent above 1940, but a decrease of 5.8 per cent under 1930.

Class I roads in the Western district for December had an estimated net income, after interest and rentals, of $19,529,848 compared with $18,951,591 in December, 1940. Net railway operating income in December amounted to $27,854,796 compared with $25,874,178 in December, 1940, and $17,800,199 in the same month of 1930.

Bus Companies Granted Fare Increase

The Interstate Commerce Commission, acting through Commissioner Aitchison, has permitted the nation's bus companies to increase their passenger fares approximately 10 per cent by filing new tariffs on 10 days' notice. The commission's action, which was predicted in last week's issue, follows the same form as that taken in permitting the railroads to increase their passenger fares by a like amount. The commission's order specifically exempts the new tariffs from applying to members of this country's and the British Empire's armed forces when traveling in uniform at their own expense, when on official leave, furlough, or pass.

Freight Car Loading

Loadings of revenue freight for the week ended January 31 totaled 815,567 cars, the Association of American Railroads announced on February 5. This was a decrease of 2,237 cars, or 0.3 per cent, below the preceding week, but an increase of 101,213 cars, or 14.2 per cent, above the corresponding week last year, and an increase of 157,737 cars, or 24 per cent, above the comparable 1940 week.

As reported in last week's issue, loadings of revenue freight for the week ended January 24 totaled 817,804 cars, and the summary for that week, compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loading

For Week Ended Saturday, January 24			
District	1942	1941	1940
Eastern	174,202	158,955	151,216
Allegheny	178,106	157,415	140,736
Pocahontas	50,961	47,847	47,898
Southern	129,061	110,864	93,414
Northwestern	98,261	81,027	76,819
Central Western	124,408	101,833	97,039
Southwestern	62,805	52,811	43,065
Total Western Districts	285,474	235,671	216,923
Total All Roads	817,804	710,752	650,187
Commodities			
Grain and grain products	47,148	30,772	30,395
Live stock	12,327	10,940	11,200
Coal	162,799	154,533	172,399
Coke	14,185	13,614	13,273
Forest products	47,343	39,008	27,815
Ore	14,103	12,431	8,830
Merchandise l.c.l.	149,455	149,862	143,370
Miscellaneous	370,444	299,592	242,905
January 24	817,804	710,752	650,187
January 17	811,196	703,497	646,382
January 10	737,172	711,635	668,241
January 3	676,534	614,171	592,925
Cumulative Total, 4 Weeks	3,042,706	2,740,055	2,557,735

In Canada.—Carloadings for the week ended January 24 totaled 64,992, as compared with 63,361 in the previous week and 52,085 last year, according to the weekly statement of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
Jan. 24, 1942	64,992	34,090
Jan. 17, 1942	63,361	30,990
Jan. 10, 1942	56,642	25,728
Jan. 25, 1941	52,085	27,570
Cumulative Totals for Canada:		
Jan. 24, 1942	234,235	116,285
Jan. 25, 1941	198,248	105,327
Jan. 27, 1940	184,926	93,669

Illinois Commission Says No to Passenger Fare Increase

Authority of the Illinois Commerce Commission to prevent increases in interstate passenger rates as granted by the Interstate Commerce Commission may be tested after February 10, the effective date of the latter Commission's order. Authority to increase multiple-trip commutation fares between Chicago and suburban districts by 10 per cent was sought from the Illinois Commission on January 27, by railroads in the Chicago area. In their petition, the railroads asked the Commission to waive its 30-day requirement and made the increase effective on February 10. The Commission refused to grant this request and the railroads on February 6 filed tariffs to become effective on March 8 in accordance with the 30-day requirement.

At the same time the Illinois Commission opposed the 10 per cent increase granted by the Interstate Commerce Commission by rejecting all tariffs seeking to increase fares beyond the two-cents-a-mile limit set by state law. The railroads, however, are proceeding, under Section 13 of the Interstate Commerce Act, to make the 10 per cent increase in line rates effective on February 10. Upon violation of the Illinois Commission's order, it can protest to the Interstate Commerce Commission or appeal to the courts.

Tie Producers to Meet in Cincinnati

The Railway Tie Association will hold its twenty-fourth annual convention at the Netherland Plaza Hotel, Cincinnati, Ohio, on May 6-7, this decision having been reached at a meeting of the Executive committee at Minneapolis on January 26.

2,000 Cars a Day for Ordnance by Year's End

Estimates by Ordnance Department officials indicate that by the end of this year at least 2,000 freight cars will be needed for ordnance shipments each day, said a February 2 statement from the War Department. Such requirements, the statement said, are indicated in the present planning which call for "vast increases in rail shipments."

I. C. C. Denies Arnold's Petition

The Interstate Commerce Commission has denied petitions of the antitrust division of the Department of Justice and the American Trucking Associations seeking to have the record reopened in several dockets involving the Seaboard Air Line's motor carrier operations. These are some of the cases in which Assistant Attorney General Thurman Arnold has been seeking to show that the railroads are invading the motor carrier field at the expense of the independent truckers, thus fostering monopoly.

Rivers and Harbors Bill

The House committee on rivers and harbors this week voted to offer a committee amendment to the pending billion-dollar rivers and harbors bill, the amendment to be a proviso to the effect that no appropriation will be made for any authorized project unless the construction of such project has been recommended "by an authorized defense agency and approved by the President as being desirable and necessary in the interest of national defense and the President has notified Congress to that effect."

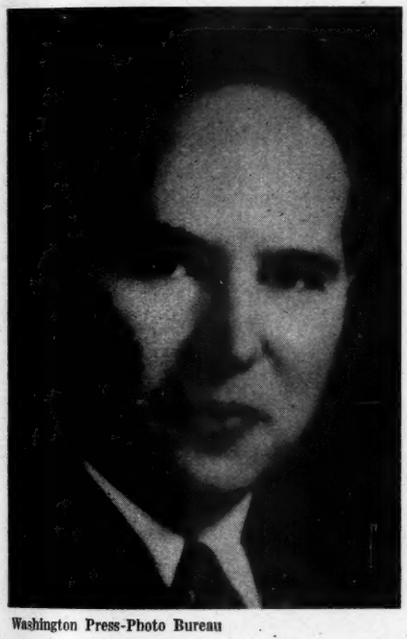
This appears to be the outcome thus far of the movement to have the bill pared down to "defense" projects which was discussed

recently by President Roosevelt as noted in the *Railway Age* of January 24, page 271. Under the proviso, such projects as the St. Lawrence Seaway, the Florida Ship Canal, Tennessee-Tombigbee, and Beaver-Mahoning, could be launched if they got the proper certification.

Barriger Joins Eastman Staff

John W. Barriger, III, has been appointed by Director Eastman of the Office of Defense Transportation to the position of associate director of ODT's Division of Railway Transport which is headed by V. V. Boatner. Also, Mr. Eastman has announced the creation of a Division of Coastwise and Intercoastal Transport, headed by Ernst Holzborn of New Orleans, La., executive vice-president of the Atlantic Coastwise and Inland Water Carriers Association, Inc., and former assistant director of the Interstate Commerce Commission's Bureau of Water Carriers.

Associate Director Barriger of the Division of Railway Transport was born on



Washington Press-Photo Bureau

John W. Barriger, III

December 3, 1899, at Dallas, Tex., and his study of railroad problems began in his early youth which was spent in St. Louis, Mo. In 1917 he entered railroad service as a shop hand at the Pennsylvania's Altoona works. In the autumn of that year he matriculated at Masssachusetts Institute of Technology, being granted a leave of absence from the railroad for this purpose In subsequent summers throughout his college years he also worked for the Pennsylvania in the engineering department, taking leaves of absence during school months. Mr. Barriger was graduated from Massachusetts Institute of Technology in 1921 and thereafter served on the engineering corps of the P. R. R.'s Toledo division and in the following year he was assigned for a time on special duty at Polk street station, Chicago. Following a few months service with the transportation inspector of the Toledo division, he spent a period of six months in Chicago on the staff of the Northwestern region edition of the Pennsylvania News.

From 1922, to October, 1924, Mr. Barriger was a transportation apprentice, in which capacity he had a wide variety of service in yards, roundhouses, freight houses, car distribution, accident investigations, marine work, ticket offices, railway mail service and train service. He served as a member of the railroad's parcel post committee appointed by General Atterbury at the suggestion of Colonel Paul Henderson, then Second Assistant Postmaster General, which made an intensive study of the handling of this class of traffic. Following the completion of his apprenticeship course, Mr. Barriger served as transportation inspector and on the staffs of the superintendent of passenger transportation and superintendent of stations and transfers. In 1926-27 he was assistant yardmaster at Altoona and for a time served on special duty for the chief of passenger transportation.

In September, 1927, he entered the statistical department of Kuhn, Loeb & Co., New York. In October, 1929, he became associated with the investment house of Calvin Bullock and was vice-president in active charge of International Carriers, Ltd., an investment trust organized by Mr. Bullock, until May, 1933, when he became chief of the Reconstruction Finance Corporation's Railroad Division. During his affiliation with the R. F. C. Mr. Barriger was active in railroad reorganization work, and is now a director of the reorganized Chicago & Eastern Illinois.

He left the R. F. C. in July, 1941, to become associated with the Western Carriers Conference Committee which handled the recent wage case for the Western roads. Since the close of that case, Mr. Barriger has been consultant for the American Railroad of Puerto Rico.

Perfect Shipping Campaign to Be Held in April

Greater need for a Perfect Shipping and Handling Campaign exists this year than in previous years, according to discussions at a meeting of representatives of shippers advisory boards and the railroads at Chicago on February 3. The meeting was called by the Car Service Division of the Association of American Railroads to discuss what phases of transportation should be emphasized in the campaign. It was suggested that the railroads concentrate on efficiency of service in order that shipments vital to war production will be delivered expeditiously and without loss or damage. Shipments that are lost or damaged, it was pointed out, often require duplication, which results in unnecessary delay, a drain on raw materials and inconvenience to the shipper and receiver.

L. M. Betts, manager of the Closed Car Section of the Association, urged that an energetic campaign be undertaken and that in view of the nation's war needs, no effort be spared in achieving the maximum conservation of materials and merchandise through the more careful packing of freight.

W. J. Williamson, traffic manager of Sears, Roebuck & Co. and chairman of the Management Committee of the campaign, said that the threatened merchandise scarcity had already begun and that "we face the need of driving home to all shippers vigorously the urgent need of holding damage to new minimum levels."

Following the meeting, the Management Committee, consisting of Mr. Williamson and the chairmen of the Loss and Damage Prevention committees of the 13 regional advisory boards, began the preparation of a program of activities for this year's campaign.

Eastman Names Board to Hear Pipe Line Application

Joseph B. Eastman, director of defense transportation, has created a board composed of B. H. Meyer, C. E. Childe and J. Paul Kelley to conduct a hearing on a request of Trans-America Pipe Line Corporation that Mr. Eastman recommend to the President that a Proclamation be issued that construction of a crude oil pipe line from a point in Texas to Savannah, Ga., is, or may be, necessary for national defense purposes. The President's authority to issue such a proclamation is contained in the Cole Pipe Line Act, approved July 30, 1941.

Mr. Meyer is a former member of the Interstate Commerce Commission; Mr. Childe is a member of the Board of Investigation and Research, created by the Transportation Act of 1940; and Mr. Kelley is an examiner on the staff of the Interstate Commerce Commission. The hearing is set for 10:00 a.m., February 19, at the office of the Interstate Commerce Commission in Washington, D. C.

Use of Tank Cars Increases

Tank car shipments of petroleum and its products into the eastern states increased 86 per cent in the two-week period, January 10-24, as the result of "intensive" efforts to bring about a greater use of this method of transportation, according to an announcement this week by Harold L. Ickes, petroleum co-ordinator.

The statement goes on to say that oil companies, acting in response to advice from the Co-ordinator's office, moved a total of 3,410 loaded cars into the area in the week ended January 24. This was an increase of 1,583 cars, by actual count, over the total for the week ended January 10, when 1,827 cars were forwarded. Most of the gain, the statement continued, was accounted for between January 17 and January 24, when loadings increased exactly 1,000 cars over the January 10-17 total of 2,410. The average daily movement for the week ended January 24 was 487 cars, compared with a daily average of 344 cars for the week of January 17, and 261 cars for the week of January 10.

Low Rates on War-Useful Junk

The Canadian railways have made specially-low rates available in order to stimulate the accumulation of scrap and junk of use in the war effort. The rates do not apply at points where regular junk-dealers are in business, and they are valid only from point of origin to a junk-dealer at any one of 16 sorting centers. (In other words, all the material will move through regular trade channels—the plan is not one designed to shoo-fly established

dealers, as was the scrap aluminum drive in the U. S. A. last summer.)

Under the plan, patriotic citizens in a community without a junk dealer get together a minimum 30,000-lb. carload of useful refuse. They notify the National Salvage Director at Ottawa and he, in turn, gets them a certificate which the railways will recognize by accepting the shipment at the special rate. The shippers don't have to pay the freight. The dealer to whom it is consigned figures the regular market value of the shipment, pays the freight, and deducts it from the sum he owes to the shippers—then send them a check for the balance.

Great Northern Loses in Supreme Court

The Supreme Court of the United States has decided that the Great Northern has no right to the oil and minerals underlying its right of way acquired under the general right-of-way statute, Act of March 3, 1875. The act granting the railroads rights-of-way is to be distinguished from the land grant statutes which gave the western roads millions of acres of land prior to 1875.

The court held that the act merely gave the railroad an easement to use the land for a right-of-way and did not grant it ownership in fee simple. As a result, it had no right to utilize any of the oil or minerals that might lie beneath the surface of its right-of-way. The court did point out, however, that the railroad was free to lease the sub-surface rights from the government under the Act of May 21, 1930.

The railroad had proposed to drill three separate oil wells on its right-of-way in Glacier National Park in Montana, the oil from the first to be sold commercially, that from the second to be refined, the more volatile parts to be sold and the residue to be used on its locomotives, and that from the third to be used in its entirety by the railroad as fuel.

A. A. R. Directors Meeting

Directors of the Association of American Railroads, meeting in Washington, D. C., on January 30, were told by Director Eastman of the Office of Defense Transportation that the railroads must prepare as best they can for any eventuality in view of the unpredictable job ahead of them. The ODT director at the same time paid tribute to the carriers for the job they have done thus far in keeping the nation's traffic moving.

The A. A. R. directors were also addressed by V. V. Boatner, director of ODT's Division of Railway Transport; while the meeting was attended also by two other Eastman aides—J. R. Turney, director of the Division of Traffic Movement, and Colonel C. D. Young, director of the Section of Materials and Equipment.

Announcement was made following the meeting of the appointment of P. A. Hollar, assistant stores manager of the Pennsylvania, to be assistant to A. A. R. Vice-President C. H. Buford. Mr. Buford is in charge of the Association's Operations and Maintenance Department. Also, the directors voted to appoint a committee of transportation officers to be charged with the duty of taking whatever action is necessary to assure an adequate supply and efficient utilization of equipment to handle the lake-cargo coal and ex-lake iron ore to and from the lake ports. A. T. Mercier, president of the Southern Pacific, was elected to the A. A. R. directorship formerly held by his predecessor in the S. P. presidency—the late A. D. McDonald.

Adjustments in Iron and Steel Scrap Price Schedule

What the Office of Price Administration announcement called "several minor adjustments" in Price Schedule No. 4, covering iron and steel scrap, were announced this week by Leon Henderson, OPA administrator. The changes became effective as of February 2, and the announcement listed those "of particular interest" as follows:

(1) Borings for chemical use in the manufacture of explosives are priced at 5 per gross ton higher than the maximum price for cast iron borings. For chemical use other than in the manufacture of explosives, the maximum price is $3 per gross ton over the price of cast iron borings.

(2) The maximum shipping point prices in New England are to be computed in the future from the prices at the most favorable basing point. The maximum transportation charges which the consumer may pay for scrap shipped from any New England shipping point is $6.27 per gross ton.

(3) Where vessel movement is involved in computation of shipping point prices and delivered prices, established dock charges may no longer be used in the computation. In lieu thereof, 50 cents per gross ton at Memphis, Tenn., $1.00 per gross ton at the Great Lakes ports, $1.25 per gross ton at New England ports and 75 cents per gross ton at all other ports, are to be used in the computation.

(4) A special provision has been inserted for consumer purchases of unprepared scrap originating at those points in remote areas at which adequate facilities are not available.

(5) The allowance for transportation charges for truck delivery has been modified. Only public carriers may use the established truck rates. Where delivery is in a vehicle owned or controlled by the scrap seller, the maximum transportation charges to be added are charges based on the highest carload rate for rail shipments. Less carload rates may not be used. Such transportation charges need not, however, fall below $1.50 per gross ton.

(6) Railroads, who do not within two weeks of February 2, 1942, file the average price information required under Appendix B, will compute their prices under Appendix A and C. Railroad scrap shipped from a dealer's yard will be deemed to have lost its railroad origin and will also be priced on the basis of Appendix A or C. Special provisions are, however, made in both cases, for long and short scrap rails and rails for rerolling.

(7) Definitions of a few grades of scrap have been clarified and tightened. Shipments involving mixture of grades referred to in the schedule are to be deemed shipments of unprepared scrap and priced accordingly, unless the consumer has authorized shipment of mixed grades in his purchase order.

Canadian Pacific Forms Central District for Air Lines

For the purpose of facilitating its air transport operations pending the establishment of a permanent form of organization, the Canadian Pacific has established a "Central District," embracing the territory extending west from the head of the Great Lakes and the east shore of Lake Nipigon to the Saskatchewan boundary and including the northeast corner of Saskatchewan south to the United States border and north to the northwest territories and Hudson Bay. The district will also comprise the operation of the Canadian Airways, Ltd., the Arrow Airways, Ltd., the Starratt Airways and Transportation, Ltd., and the Wings, Ltd., as one unit.

The formation of the Central District on January 28 follows the appointment of C. Becker, on January 7, as reported in the *Railway Age* of January 17, to the newly created position of general superintendent at Edmonton, Alta., with responsibility for the operations and maintenance of the Canadian Airways, Ltd., the Ginger Coote Airways, Ltd., the Yukon Southern Air Transport, Ltd., the British Yukon Navigation Company, Ltd., the United Air Services, Ltd., and the Prairie Airways, Ltd. The officers of the Central District, all of whom are located at Winnipeg, Man., are as follows: M. E. Ashton, general superintendent; D. S. Atkinson, superintendent; A. E. Hutt, superintendent of maintenance, and C. H. Brereton, superintendent of communications.

Three I. C. C. Service Orders

Service Orders Nos. 68, 69, and 70 have been issued by the Interstate Commerce Commission to cover situations requiring "immediate action to prevent shortage of railroad equipment and congestion of traffic."

Service Order No. 68 was issued January 30 with an effective date of February 15. It suspends those provisions of Rules 24 and 34 of Consolidated Freight Classification No. 14 and other tariffs containing similar provisions "in respect of the furnishing, substitution, and use of multiple cars for single shipments." Such tariff provisions, the order said, "result in wasteful car service." The order does not affect those portions of Rule 34 which provide carload minimum weights graduated according to car lengths or capacity; nor tariffs relating to minimum weights for carload shipments of articles which by reason of their length require two or more open cars for their transportation.

Service Order No. 69 was issued February 3, effective immediately. It authorizes railroads serving the New England ports of Portland, Me., Boston, Mass., East Boston, New Bedford, New Haven, Conn., and Providence, R. I., "to remove freight at or consigned to any of such ports for export from railroad cars and to place and hold the same for ground storage, subject to applicable charges for the additional services performed."

Service Order No. 70 was issued February 3 with a February 20 effective date. It suspends rules and charges governing the diversion or reconsignment of fruits and vegetables in refrigerator cars, insofar as they authorize or permit diversions or reconsignments in excess of three while en route, plus one additional change in consignee or place of unloading at destination.

Modification of Price Schedule for Relaying Rails

Several modifications in Price Schedule 46, covering relaying rails, were embodied in Amendment No. 1 issued on February 3 by Leon Henderson, administrator of the Office of Price Administration. The amendment became effective February 7.

The first change extends the time for filing reports of purchases and sales from 10 to 15 days after the transaction. The term "relaying rail" used in the Schedule has been specifically defined in the Amendment as: "Rail, (1) which weighs 35 lb. or more per yard when new, (2) which is suitable for relaying and (3) which has

been submitted to all reconditioning processes, if any, necessary to render it fit for reuse as rail."

Denver, Colo., has been added to the list of basing points included in the Schedule. The ceiling price on relaying rail purchased on the basing point basis has been revised so that it need not be less than $24 per gross ton in any case. The warehouse ceiling price on carload lots of relaying rail has been lowered from $32 per net ton to $32 per gross ton. Provision has been made, however, for allowance of a charge for reconditioning extras demanded by the consumer at a scale established in the Schedule.

The amendment also allows a purchaser's agent a commission up to $1 per gross ton. This allowance, however, is permitted only when the agent is employed by the purchaser and when the agent has no beneficial interest in the seller as an employee, or otherwise. Ceiling prices on relaying rail have been limited in application to sales or deliveries of such rails within the continental limits of the United States.

Vaughan Says War Proves Value of "Marginal" Lines

Pointing out that the Canadian National in 1941 handled more traffic than ever before and that railroad traffic in the Dominion is now 60 per cent greater than in the peak year of the last war, R. C. Vaughan, president, Canadian National, told members of the Canadian Club of Montreal, Que., on February 2 that marginal and development lines of the Canadian National are now proving their value. Canada now has three transcontinental lines, as compared with one in 1914, said the C. N. R. chief, and "even the light traffic lines which had long represented a heavy drain on the net revenue of the railway have come to have an added value to the nation. Those routes which the nation decided was not prudent to dismantle and thereby handicap the country's future development, have proven an asset of incomparable, indeed, inestimable value."

Mr. Vaughan devoted considerable time to describing the importance of the routes of the Canadian National built principally for development purposes, the value of which has been held in doubt by many authorities. He said that since the war great new industries have been located in communities where there was no industry before and landing fields, schools and depots for the Commonwealth Air Training plan—more than 100 in number—and great military training camps came into being, many in vacant or barren land. In all cases these are served by railroad lines.

Expanding further on this subject, the speaker said: "When I think of the present day value of the railways which were built into unpopulated sections, my mind goes back, in particular, to two such lines: one of these was off the National Transcontinental into what we now know as the Rouyn region of this province. That line made possible the first opening up of that great enterprise, Noranda Mines, Limited. Without the building of that line, the establishment of that enterprise might not have taken place in our time.

"Then there was the building—also over very rough and uninviting territory—of a line off the Hudson Bay railway in Manitoba which made possible the opening up of the Flin Flon claim and the establishment of that enormous industry, the Hudson Bay Mining & Smelting Co. You have some realization of how many millions of dollars Noranda and Hudson Bay mean to the nation's exchequer, and of the many thousands of days of employment our citizens have found in these enterprises, and now you know of their immense wartime value. Their copper and zinc are among the most essential of our commodities. I could give many other instances. It is not surprising that much of our development mileage remains without its Noranda, its Hudson Bay Mining, or its Arvida, and it is true that this unprofitable mileage continues to be a heavy financial load on the railway. Development is slow in many of these sections, but it will be accelerated, we believe, after the war, and in the meantime hundreds of communities of Canadians are established there, thousands of our people are enabled to earn their livelihood by reason of having these transport facilities, and all are contributing to our gigantic war effort.

"It was suggested from time to time that these development lines should be abandoned because they did not give a proper return to the railway on the capital invested, and among the suggestions made was that practically all of the National Transcontinental main line between Quebec, P. Q., and Moncton, N. B., should disappear. That line is now the most vital railway link in the transportation of war material from Canada to Great Britain."

Steel for Way and Structures Work

First-quarter allotments of steel and copper for maintenance of way and structures work were announced by the War Production Board on February 1. A program calling for the allotment of 900,530 tons of steel and 2,250 tons of copper has been approved by WPB—"provided the requirements can be met without interfering with shell production."

Of the 900,530 tons of steel, 538,000 tons is for new rail, and 294,000 tons for track fastenings. For frogs, switches and guard rails there is allotted 21,900 tons of rail and 12,300 tons of plate; and for bridges and buildings, 13,700 tons of plate and 20,630 tons of shapes. The program, drafted by WPB's Transportation and Farm Equipment Branch after conferences with the Railroad Industry Advisory Committee, will be executed by specific allocations of steel to individual roads.

In addition to stipulating that the program must not interfere with output of shell steel, "which can be rolled in mills primarily engaged in rolling rails," the WPB announcement also said that "if called upon to do so, the railroads must release relay (second-hand) rail for defense needs in amount up to one-third the tonnage of their first quarter receipts of new rail."

"Out of the first quarter tonnage of rail," the statement went on, "each railroad will get approximately one-third of the amount of rail requested by it for maintenance of way during the entire year. Adjustments will be necessary in ensuing quarters to meet each road's requirements as determined by the requirements survey being undertaken by the Office of Defense Transportation and in line with the shell production program. Steel allotted for the first quarter is for essential safety and service needs, and is not intended for general expansion of or additions to existing equipment."

The estimated steel needs of the railroads for the year 1942 were given in the *Railway Age* of January 24, pages 262 and 263.

Club Meetings

The New England Railroad Club will hold its next meeting on February 10 at the Hotel Touraine, Boston, Mass. Major Leicester S. Johnston, Chemical Warfare Service, will speak on "Function of Air Raid Precaution Services."

The Car Foremen's Association of Chicago will hold its next meeting on February 9 at the La Salle hotel, Chicago, at 8 p. m. The program includes a discussion of proposed changes in the A. A. R. Rules of Interchange, effective January 1, 1943.

The Pacific Railway Club will hold its next meeting on February 12 at the Palace Hotel, San Francisco, Cal., at 7:30 p.m. "Braking Modern High-Speed Passenger Trains" will be discussed by V. Villette, Pacific manager, Westinghouse Air Brake Company. The program will include a demonstration of the "Decelostat."

The Central Railway Club of Buffalo will hold a "Victory Night" meeting on February 12 at the Hotel Statler, Buffalo, N. Y., at 8 p. m. "The War and Anthracite" will be presented by H. L. Littell, director of public relations and engineer, Anthracite Institute, New York, and The Institute's moving picture, "Origin, Mining & Preparation of Pennsylvania Anthracite," shown. First Aid Instruction and demonstration by Richard J. Stoll, staff instructor, American Red Cross, will be conducted, and a moving picture, "The Bombing of London" will be shown under the direction of Detective Arthur J. Collins, Bureau of Operations, Buffalo Police Department.

The Car Foremen's Association of Omaha, Council Bluffs and South Omaha Interchange will hold its next meeting on February 12 at 1:30 p.m. at the Chicago Great Western freight house, Council Bluffs, Iowa. A. A. R. rules will be discussed by H. W. Hauson.

Want Eastman on WPB

Appointment of Director Eastman of the Office of Defense Transportation to membership on the War Production Board and delegation to Mr. Eastman of "full powers to control all priorities, allocations and rationing affecting all motor vehicle transportation" were recommended this week by eleven "national highway user groups." The recommendations were embodied in a statement which was transmitted to WPB Chairman Donald M. Nelson and to Mr. Eastman.

According to the announcement issued by the National Highway Users Conference, the following organizations signed the statement: American National Livestock Association; American Trucking Associations, Inc.; Farmers' Educational and Co-

operative Union of America; National Association of Motor Bus Operators; National Automobile Dealers Association; National Council of Private Motor Truck Owners, Inc.; National Rural Letter Carriers Association; National Sand & Gravel Association, Inc.; Retailers' National Council; Rubber Manufacturers Association; National Grange. The specific recommendations are:

"1. That the Director of the Office of Defense Transportation immediately be made a member of the War Production Board, in order to make possible at all times adequate presentation of transportation problems as they relate to the parallel problems of production.

"2. That since the ultimate responsibility for assuring adequate transportation in the war emergency has been placed in the Office of Defense Transportation, all powers pertaining to priorities, allocations and rationing of motor vehicles, parts, tires and materials necessary in their manufacture, must be vested in the Office of the Director of Defense Transportation. This is vital for transportation in war production and for essential civilian use. Only in this way can the Director of Defense Transportation be insured of fulfilling his task of meeting the full requirements of war-time transportation."

ODT's Division of Transport Personnel

The Office of Defense Transportation's Division of Transport Personnel which is headed by Otto S. Beyer, member of the National Mediation Board, will act as a coordinating and advisory agency with respect to all personnel problems among employees of transportation agencies which require action on the part of the ODT. Thus was the division's role explained in an article appearing in the latest issue of "Victory," weekly bulletin of the agencies in the Office for Emergency Management, of which ODT is one.

The article goes on to say that the division will be principally concerned with problems of labor supply and labor requirements in all branches of transportation. These will involve forecasting as accurately as possible the personnel needs of the industry, advising the Selective Service authorities as to occupational deferments, encouraging the development of recruiting and training programs where this is necessary, and cooperating with carriers and their employees in the effort to secure the most efficient utilization of transportation manpower in a labor market situation in which shortages of personnel are bound to occur.

Problems of labor relations as such will not be handled by the division. If questions of this sort are brought to the attention of ODT, they will be referred to the appropriate agencies outside of the office already established to handle labor relations matters. The division, it is further explained, has begun its work with a survey of existing sources of labor market information among government and private agencies as to workers engaged in transportation by rail, motor, water, air, and pipe line. Where existing information is inadequate, the division will cooperate with these agencies in securing more complete labor market data so that personnel shortages can be anticipated and the necessary remedial actions taken.

"Expanding war efforts," concludes the statement, "make it highly important to secure the maximum effectiveness of the existing supply of transportation employees. Many phases of transportation operations require a larger standby force than would be necessary if operations were carefully regularized. The Division of Transport Personnel, in cooperation with other divisions of the ODT, will be concerned with plans for stabilizing operations so that the smallest number of employees possible who are not actually working need be on call for work."

False Opinions About Transport

(*Continued from page 345*)

had this to say: "The reverse is true. It may have submerged these problems for the time being, but, rather than solving them, it may have increased their ultimate complexity. There must be adjustments to take care of this enormous traffic increase, and when the inevitable reaction comes these adjustments may well increase our difficulties. Unless plans are laid now which reach beyond the present, unless the emergency policies adopted now are framed with a view to the future, the difficulties of the early 1930's will be surpassed in every respect when the war-time traffic slackens."

Coming to his discussion of the "third fallacy"—the thought that "changes now in progress are temporary"—Mr. Smith warned that such changes, "taking place everywhere everyday," are "bound to alter permanently the composition of industrial traffic." "For example," he went on, "there is the decentralization of industry, which is opening new fields and building new centers of production in state after state. Conversion of new plants from armament to peace-time uses may result in production which in some cases will be closer to sources of materials and in other instances nearer to markets than former industrial locations, but in either event will profoundly affect the pattern of national transportation requirements. The center of industrial production of the nation may shift hundreds of miles before the war is ended. The permanent transportation plant, canals, highways, railway roadbeds and terminals, will need readjustments which may surpass all present estimates in number and extent. Whether we can meet these new conditions with the necessary initiative and foresight will be a test of our American capacity,—not the same ability as that which flung roads and railways across an empty continent, but the capacity to discern in the shadowy future enormous social and industrial changes in the organization of the country, and to devise new means to meet new problems."

Despite this "dark and puzzling" outlook, Mr. Smith found cause for confidence. "The transportation system of the United States," he said, "was planned on broadest lines, and this is a source of great strength. Furthermore, the men who operate the transportation plant are distinguished by independence, responsibility and competence . . . . Most of them are convinced of the necessity of facing the problem of planning for the future insofar as that future can be foreseen with reasonable clarity, and many of them believe that the Board of Investigation and Research can perform a truly constructive service in this field." As for itself, the Board, in the performance of its task, promises to follow "the ideal of public service."

As he has done in other recent addresses, Mr. Smith again sketched the background of events leading to the creation of the Board. Also, he told how the Board has organized for the studies which it is directed to make of the relative economy and fitness of the various types of carriers, public aids to carriers, and the extent to which taxes are imposed upon carriers; and for the study of the interterritorial freight rate structure which the Board is making in accordance with its commitment to the Senate committee on appropriations. Referring to the appointment of Joseph B. Eastman as Director of Defense Transportation, Mr. Smith said that "the recent creation of the Office of Defense Transportation under the direction of one of America's most outstanding and distinguished public servants, is encouraging evidence of the recognition of the fundamental importance of transportation in our national economy, whether for peace or for war."

Strike Stops North Shore Operation into Chicago

The operation of trains of the Chicago, North Shore & Milwaukee into Chicago over the tracks of the Chicago Rapid Transit Company was halted on February 1 when the Rapid Transit division of the Amalgamated Association of Street Railway & Motor Coach Employees of America refused to switch North Shore trains to the elevated tracks, in an effort to stop what it termed "raiding tactics" by the railroad brotherhoods and to retain its position as sole bargaining agent. As a result of the strike, 138 trains, including 37 Chicago-Milwaukee trains, which operate in and out of Chicago, must terminate their runs at Linden avenue in Wilmette, Ill., or at Dodge avenue in Evanston, Ill., and Chicago passengers must use the elevated lines within the city limits.

The strike is the result of wrangling among the unions which started early in 1938 when the Brotherhood of Railroad Trainmen and the Brotherhood of Locomotive Firemen and Enginemen entered upon a campaign to secure members among North Shore employees. Their first attempt to terminate the arrangement under which Amalgamated had been the bargaining agent for 19 years, occurred in June, 1938, when these brotherhoods filed complaints with the National Labor Relations Board and asked that they be certified as the sole collective bargaining agencies for

the employees in their respective groups. On August 15, 1938, seven days before the board was to hold hearings on the brotherhoods' request and Amalgamated's contention that the board was without jurisdiction because the railroad is subject to the Railway Labor Act, Amalgamated called a strike. As a result of these moves, the operation of the railroad could be resumed only if a contract were made with Amalgamated. The strike was ended on October 6, 1938, when a contract was signed by the company whereby Amalgamated became the sole bargaining agent for all employees and all workers had to be affiliated with this union while the contract is in effect. This contract has been renewed each year and does not expire until May 31, 1942.

On July 11, 1939, the Interstate Commerce Commission ruled that the North Shore was not a street, interurban or suburban electric railway and that it is a part of the general steam railroad system of transportation. This action placed the road's labor matters before the National Mediation Board, rather than the National Labor Relations Board, but since the contract was signed before the Mediation Board took jurisdiction it was binding.

Following the Commission's ruling, a number of employees who had memberships in both Amalgamated and the brotherhoods stopped paying dues to Amalgamated. Encouraged by this action, the Brotherhood of Locomotive Firemen & Enginemen, the Brotherhood of Railroad Trainmen, the Order of Railroad Telegraphers and the Hotel & Restaurant Employees National Alliance, in October, 1941, asked the National Mediation Board to certify them as bargaining agents. The board held hearings but has not rendered a decision.

Says Truckers Violate Sherman Act

The filing of a civil complaint in the United States District Court for the Northern District of California, at San Francisco, Calif., against "Freightways," a corporate association of motor carriers, with headquarters at Salt Lake City, Utah, 10 associated carriers, and 38 of their officers, directors, and agents, was announced on February 2 by the Department of Justice. The defendants are charged with combining and conspiring to restrain trade and commerce in violation of section 1 of the Sherman Antitrust Act and with attempting and combining to monopolize in violation of section 2 of the Sherman Act.

The 10 associated carriers named as defendants are: Consolidated Freightways, Inc., Portland, Ore.; Canadian Freightways, Lethbridge, Alberta; Pacific Intermountain Express Company, Salt Lake City; Phoenix Blue Diamond Freightways, Los Angeles, Calif.; Salt Creek Freightways, Casper, Wyo.; Savage Transportation Company, Inc.; San Francisco; Union Transfer Company, Omaha, Nebr.; Wilson Freightways Limited, Edmonton, Alberta; Mitchell Brothers Truck Line, Portland, Ore.; and L. J. Russell Transportation Company, Douglas, Wyo.

The 10 defendant motor carriers operate as common carriers of freight over an aggregate of 25,000 highway miles in and between 16 western states, extending from Chicago, Minneapolis and Omaha, to the entire inter-mountain and Pacific coast areas of the west, it was pointed out. It is estimated that the 10 carriers perform approximately 50 per cent of the long haul motor carrier transportation west of the Mississippi River.

The complaint alleges that these 10 carriers have combined through the instrumentality of the corporate association, "Freightways," with the purpose and effect of conferring upon "Freightways" unified control of their competitive activities, of suppressing and eliminating competition between themselves and of suppressing and restraining competition by non-member carriers. Numerous long haul routes operated by the individual members of the combination, it is further alleged, are identical or parallel and competitive with routes operated by other members.

The complaint goes on to declare that elimination of competition between member carriers has been achieved by (a) merger of member carriers' identity in "Freightways"; (b) adoption of an elaborate system of zoning and territorial assignment covering the entire United States pursuant to which all competition service over identical and parallel routes has been abandoned, and (c) establishment of a "Freightways" committee through which rates are agreed upon and fixed by common action.

The complaint asks that the violations be enjoined, the agreements cancelled, "Freightways" dissolved, and the member carriers' interest therein divested in such manner as to restore competition, reestablish abandoned avenues and facilities of commerce, and remove obstacles to the free flow of commerce.

The announcement concludes by saying that the Department's investigation was conducted with the close cooperation of the Interstate Commerce Commission's Bureau of Motor Carriers, and that it is intended that the commission and the Office of Defense Transportation will be consulted at each important stage in the litigation.

Why Federalize T. P. & W.—McNear

(*Continued from page 346*)

parently the inflammatory statements and other activities of Robertson, Whitney and their associates have caused some of our former employees to feel they are above the law and the injunction against violence issued by the federal court on January 19, as there have been some further acts of violence. However, we feel that those involved in acts in violation of the court's injunction, including General Chairman Newdigate of the Brotherhood of Railroad Trainmen, will be appropriately dealt with by the courts and that full respect for law and order will prevail. We are now operating all trains necessary to handle all traffic offered and expect that our operations will soon become more efficient than ever before. Under all of these circumstances we do not believe our government will want to take over this railroad merely to force upon it a lot of wasteful featherbed rules."

Allegations that a group of strikers had planned to dynamite a railroad bridge were revealed on February 3 when Federal Judge J. Leroy Adair summoned three men into court to determine if the injunction had been violated. The judge's order said a fourth man had been paid $1,270 to blow up a bridge near Eureka, Ill. The order alleged that Paul Brokaw, a public relations representative of the brotherhoods, had paid $1,270 to William Weaver to dynamite the bridge and that Brokaw had arranged for Delmar Newdigate, general chairman of the Peoria lodge of the Brotherhood of Railroad Trainmen, to deliver the explosives to Weaver at the bridge on January 27. At the bridge, it was alleged, Weaver was stopped by a county deputy sheriff as Newdigate drove up with the dynamite.

President Roosevelt was asked at his January 30 press conference as to what action he had taken in regard to the telegram from the Brotherhood of Locomotive Firemen & Enginemen and the Brotherhood of Railroad Trainmen requesting that he take over the operation of the Toledo, Peoria & Western.

The President said that he had received the telegram, which was signed by D. B. Robertson, president of the B. of L. F. & E., and A. F. Whitney, president of the Trainmen, and had sent it to the railway labor board for recommendations. Inquiry at the National Mediation Board disclosed that the record in the case was closed since the process of the Railway Labor Act had run its course.

Later, the office of the newly-created National War Labor Board said that the request of the brotherhoods had been sent to John R. Steelman, director of conciliation in the conciliation service of the Department of Labor.

Congressmen Criticize Parcel Post Operations

The operations of the parcel post came in for some criticism from various members of Congress recently when the Post Office Department was before a House appropriations subcommittee seeking its appropriation for the fiscal year 1943. This criticism was revealed this week when hearings before the subcommittee were made available.

Representative Ludlow, Democrat of Indiana and chairman of the subcommittee, began the questioning on this particular phase of the postal service by asking whether or not the parcel post is a continuous loser from a financial standpoint. Roy M. North, deputy third assistant postmaster general, did not think that the parcel post was losing and went on to say that there were other things to consider.

"We must consider," he continued, "in the administration of the parcel post system, so far as rates are concerned, that parcel post motivates and brings about considerable usage of other mail. For instance, I do not think we should overlook the fact that use of parcel post usually means issuance of a money order and use of a three-cent stamp, and on the three-cent stamp there is probably a profit of about one cent;

necessarily we have to take that into account in figuring a proper figure of operating costs."

The discussion then got around to the question of why the greatest losses were in zones one and two where the rates are the lowest. John A. Brennan, director of parcel post, told the subcommittee that the same rates have been in effect since 1932.

"I would like to ask you why, since every other service that I know anything about in America has gone up since 1932, in every business enterprise, wages and everything else has gone up, why should not the rates be raised a little bit for parcel post?" queried Representative O'Neal, Democrat of Kentucky. "Every other enterprise has raised its rates; why should the federal government not recognize that things do cost more and put a little more on parcel post?"

"I would like to point out," replied Mr. Brennan, "that the express companies reduced their rates three years ago. The express companies went to the Interstate Commerce Commission in April, 1939, and got a reduction from 35 to 25 cents on the minimum. Yet they must perform a different service; they pick up and deliver, provide automatic insurance, collect charges on delivery, and yet we must meet that competition, and we must also bear in mind what the public can afford to pay and what the traffic will bear."

After Representative O'Neal had continued to ask whether or not it cost more now to operate the parcel post than it did in 1932, Mr. Brennan went on to explain to him that "cost ascertainment shows a lower cost per individual piece when we get more volume as during the period when rates are low. The whole costs have gradually gone up but the costs per unit piece have decreased and the disparity between total revenues and costs is less . . . . We have a big institution to handle the parcel post and to keep that machinery going we have to keep rates down to where we can meet competition."

"Of course," replied the Kentucky congressman, "the same argument applies to every other business in America. Of course you can do a lot of business if you are going to lose money, there will be no difficulty in doing a lot of business, even more business than you are doing if you reduce your rates further, but your net loss would be greater, and I do not know any business in America that operates on that plan."

National of Mexico Takes Over Calzontzin-Apatzingan Line

The Calzontzin-Apatzingan line, which was recently built by the Department of Communications of the Mexican Government and which had been annexed to the Pacific division in the state of Michoacan, has been taken over by the National Railways of Mexico. The principal products of the territory are cane, sugar, rice and tropical fruits, the production of which will be intensified by irrigation which is now under development. The line has seven bridges, one of which is 374 ft. above the river bed. Seventy-pound second class rails on creosoted pine ties are used on the line.

Equipment and Supplies

Heavy Freight Car Buying Resumed

Action to expedite Car-building program releases dammed-up demand

The number of factors combining at the turn of the year to expedite new freight car-deliveries by contract car builders and railroad company shops found immediate reflection in the volume of new orders for this equipment placed during the first month of the new year.

Encouraging at the year's end was the increased rate of production effected by contract car builders in December, resulting in a total of 7,057 new freight cars delivered for domestic service, largest monthly volume achieved during the entire year, and the consequent reduction in unfilled orders on car builders' books to 52,773 cars, smallest backlog since April, 1941. Railroad company shops in December turned out an estimated additional 1,324 cars.

Stimulating also to new purchasing was the action taken by the former Supply, Priorities and Allocations Board (absorbed in January by the newly created War Production Board, which also supplanted the Office of Production Management) authorizing the OPM to grant priorities for the construction of 36,000 cars during the months of February to April, inclusive. This authorization, based on estimates that weekly carloadings would reach a level of about one million cars as early as May of this year, provided for cars, according to SPAB, that would "just permit the roads to meet this peak at full operating efficiency."

Followed by reports estimating January construction at 9,000 cars, this action let daylight into the theretofore dark outlook for deliveries, and, activated by the prospect of earlier delivery dates for newly-ordered equipment, purchasing of new freight cars for domestic service during January spurted to 8,479 cars, largest monthly number placed since July, 1941, and alone about equal to the combined total placed during the final four months of last year. Not included in this total of 8,479 cars are 1,000 hopper cars purchased by the Reading and 1,000 box cars purchased by the Norfolk & Western (announced elsewhere in these pages) reports of which were received too late for inclusion in January orders and which render even more imposing the heavy volume of purchasing with which the new year began.

January orders were divided 8,278 cars by railroads and 201 by the United States Navy Department and were allocated 8,376 to contract car builders and 103 to railroad company shops. Purchases comprised 3,038 box, 3,600 hopper, 1,300 gondola; 538 flat and 3 transformer cars, and included chiefly 3,425 cars by the Louisville & Nashville, 1,000 by the Chesapeake & Ohio, 2,000 by the Atlantic Coast Line and 1,750 by the Chicago & North Western.

Equally impressive and indicative that February orders would exceed January placements was the large number of freight cars comprised in inquiries that came into the market but were unfilled at the end of the month. Thus the Southern invited

Domestic Equipment Orders Reported in Issues of the Railway Age in January 1942

LOCOMOTIVES

Date	*Name of Company*	*No.*	*Type*	*Builder*
Jan. 17	Chesapeake & Ohio	15	0-8-0 Sw.	Lima Locomotive Works
Jan. 24	Stone & Webster	1	Diesel-electric Sw.	General Electric Co.
Jan. 24	Sanderson & Porter	2	Diesel-electric Sw.	General Electric Co.
Jan. 31	Southern	2	Diesel-electric Freight	Electro-Motive Corp.
Jan. 31	Remington Arms Co.	1	Diesel-electric Sw.	General Electric Co.
Jan. 31	U. S. Navy Dept.	1	Diesel-electric Sw.	H. K. Porter Co.
		2	Diesel-electric Sw.	General Electric Co.
Jan. 31	Wabash	1	Diesel-electric Sw.	Baldwin Locomotive Works

FREIGHT CARS

Jan. 10	Louisville & Nashville	750	Hopper	American Car & Foundry
		100	Cov. Hopper	American Car & Foundry
		500	Box	American Car & Foundry
		750	Hopper	Pullman-Standard
		500	Box	Pullman-Standard
		500	Hopper	Pressed Steel Car
		100	Flat	Mount Vernon Car
	(Atlanta & West Point)	225	Box	Pullman-Standard
Jan. 10	Chesapeake & Ohio	1,000	Hopper	American Car & Foundry
Jan. 17	New York Central	3	Transformer	Despatch Shops
Jan. 17	Pittsburgh & West Virginia	100	Box	Company Shops
Jan. 24	U. S. Navy Dept.	12	Flat	American Car & Foundry
Jan. 31	Atlantic Coast Line	1,100	Auto-box	Pullman-Standard
		400	Hopper	Bethlehem Steel Co.
		300	Gondola	Bethlehem Steel Co.
		100	Cov. Phosphate	Bethlehem Steel Co.
		100	Flat	Greenville Steel Car
Jan. 31	U. S. Navy Dept.	10	Box	General American
		15	Flat	American Car & Foundry
		61	Flat	Haffner-Thrall
		12	Box	Haffner-Thrall
		91	Box	Greenville Steel Car
Jan. 31	Chicago & North Western	500	Gondola	Bethlehem Steel Co.
		500	Gondola	General American
		500	Box	American Car & Foundry
		250	Flat	Pullman-Standard

NO PASSENGER-TRAIN CARS ORDERED IN JANUARY, 1942

proposals during the month, bids to be received on or before February 10, on a total of 3,500 cars, including 2,500 50-ton steel hopper cars and 1,000 50-ton steel drop-bottom high-side gondola cars. The Baltimore & Ohio issued inquiries for 2,000 cars, including 1,000 50-ton box and 1,000 50-ton hopper cars; the Chicago, Rock Island & Pacific for 775 cars, including 300 50½-ft. 50-ton auto-box, 300 53-ft. 50-ton flat, 150 34-ft. 50-ton open-top twin hopper and 25 35-ft. 70-ton covered hopper cars; the Pere Marquette for 250 53½-ft. 70-ton flat cars; the Grand Trunk Western for 200 40-ton box cars; and the New York Central was reported contemplating the acquisition of a substantial number of cars.

Orders for locomotives for domestic service as reported by the *Railway Age* during January comprised 15 steam switching locomotives of the 0-8-0 type by the Chesapeake & Ohio and a total of 15 Diesel-electric locomotives, of which three were ordered by railroads, including two 5,400-hp. freight locomotives by the Southern and one 1,000-hp. switcher by the Wabash, four by industrial companies and three by the United States Navy Department. Largest locomotive inquiry coming into the market during January and unfilled at the end of the month was the New York Central's request for bids on 25 steam engines of the 4-8-2 type.

Omitted from January purchases of freight cars and locomotives as stated above were orders placed by the United States Government during the month for 5,016 freight cars of various types and 50 steam locomotives of the 0-6-0 type.

No passenger-train car orders were reported in January. Excepting the purchase of one coach by the Nashville, Chattanooga & St. Louis in November, no orders for passenger-train cars have now been placed since September, 1941. During January, the newly formed Railroad Industry Advisory Committee to the War Production Board discussed the requirements for passenger service in the light of the increased military traffic, the curtailed use of automobiles and the reduced supplies of rubber for civilian needs, and urged that materials be made available immediately for repairs to existing equipment and that reconsideration be given of the need for new coaches and sleeping cars.

A table showing the volume of orders placed for new railway equipment in each month of the period January 1, 1941-January 1, 1942, inclusive, is set forth herein. Orders include purchases by railroads, industrial companies and private car lines, and U. S. Government departments. Orders for the twelve months of 1941 are based on the annual statistical survey of the *Railway Age* published in the January 3 issue and supersede the monthly totals previously reported during the year in the Equipment & Supplies column, which summarized weekly reports of orders placed as developed by the *Railway Age* news service.

Court Approves M. P. Budget for $10,653,985

The district court has approved a Missouri Pacific budget for $10,653,985 for 1942. The total includes $1,944,100 commitments for rails made in 1941. The largest item in the budget is $3,730,230 for labor and materials for the laying of 220 miles of new rails and the relaying of 229 miles of secondary track. The cost of track realignment and new semaphore signals between Jefferson City, Mo., and Sedalia, is fixed at $90,000. Among several large bridge items is an appropriation of $265,000 for replacing a bridge over the Ouachita river at Riverton, La. It is also proposed that $65,000 be expended on the air-conditioning of the first three floors of the Missouri Pacific building at Thirteenth and Olive streets in St. Louis, Mo. Other improvements included in the budget are the conversion of passenger cars, and repairs to locomotives and freight cars.

LOCOMOTIVES

THE LAKE CHAMPLAIN & MORIAH has ordered one 1,000-hp. Diesel-electric switching locomotive from the Electro-Motive Corporation.

THE BETHLEHEM STEEL COMPANY has ordered one 25-ton Diesel-electric switching locomotive for use at its Sparrow Point, Md., plant from the General Electric Company.

THE CHICAGO, ROCK ISLAND & PACIFIC has purchased a total of 17 Diesel-electric locomotives, including five freight locomotives of 4,050 hp. each and eight switchers of 600 hp. each ordered from the Electro-Motive Corporation and four switchers of 1,000 hp. each ordered from the American Locomotive Company. Receipt of district court permission for the purchase of this equipment was reported in the *Railway Age* of December 27.

THE UNITED STATES NAVY DEPARTMENT is asking bids, February 11, on one 50-ton Diesel-electric locomotive and one 25-ton Diesel-electric locomotive under schedule 5139.

THE UNITED STATES NAVY DEPARTMENT, Bureau of Supplies and Accounts, is inviting bids on a total of 16 Diesel-electric switching locomotives, including four 1,000-hp. locomotives of 115 tons each under schedule 900-7577 and 12 locomotives of 45 tons each under schedule 900-7578.

FREIGHT CARS

THE NEW YORK, CHICAGO & ST. LOUIS has ordered 25 30-ton caboose cars from the Magor Car Corporation. The inquiry for this equipment was reported in the *Railway Age* of January 31.

THE DETROIT, TOLEDO & IRONTON has placed an order for 50 flat cars of 70 tons' capacity and 70 gondola cars of 70 tons' capacity with the Greenville Steel Car Company. The inquiry for this equipment was reported in the *Railway Age* of January 10.

THE NORFOLK & WESTERN has placed an order for 1,000 40-ft. box cars of 50 tons' capacity with the Ralston Steel Car Company. These are in addition to 1,000 cars of the same type ordered by this road from Ralston in April, 1941, final delivery of which is expected to be made this month.

THE READING has been authorized by its board of directors to construct 1,000 31-ft. steel hopper coal cars of 55 tons' capacity in the company's own shops as soon as the material is available, at a total expenditure of approximately $2,500,000. The board also authorized the conversion of 50 70-ton hopper coal cars into 50 covered cement hopper cars for the handling of cement, at a cost of approximately $130,000.

MOTOR VEHICLES

THE RIO GRANDE MOTOR WAY, INC., Denver, Colo., Denver & Rio Grande Western affiliate, has ordered two motor coaches and the Santa Fe Trail Transportation Company two air-conditioned motor coaches from the a. c. f. Motors Company.

SIGNALING

THE GREAT NORTHERN has placed an order with the General Railway Signal Company for materials to be used on a d-c. block signaling installation between Coon Creek Junction, Minn., and Brook Park, a distance of 57 miles. The order includes 76 Type-D color-light signals, 280 Type-K relays, 91 Type-W relays, 35 Type-BT, Size-132 copper-oxide rectifiers, 25 Model-7 switch circuit controllers, besides relay boxes, and other miscellaneous apparatus.

DOMESTIC EQUIPMENT ORDERS REPORTED BY THE RAILWAY AGE

January, 1941-January, 1942 inclusive
(See Note Below)

1942	Locomotives: Steam	Diesel-Elec.	Electric	Total	Freight Cars	Passenger Cars
January	15	10	..	25	8,479	..
1941						
December	..	63	..	63	1,519	..
November	4	74	2	80	3,942	1
October	11	70	..	81	1,573	..
September	10	47	..	57	1,736	10
August	..	60	..	60	6,368	3
July	45	120	1	166	9,190	40
June	48	147	15	210	28,623	18
May	54	128	6	188	23,145	124
April	2	84	..	86	16,348	152
March	56	95	..	151	9,673	117
February	41	82	6	129	4,585	45
January	31	126	8	165	11,669	38

NOTE: Orders reported for the twelve months of 1941 are based on annual statistical survey in the Railway Age of January 3; orders for January, 1942, are as reported by the Railway Age news service. Orders include purchases by railroads, industrial companies and U. S. Government departments.

Supply Trade

The **Standard Car Truck Company,** Chicago, has opened an office at 455 Paul Brown building, St. Louis, Mo., with **J. C. Barber** in charge.

The **Pacific Railway Equipment Company,** Los Angeles, Cal., has moved its offices and plant to 960 E. Sixty-first street in that city.

George G. Prest, who was associated for a number of years with the late **George H. Goodell,** railway equipment manufacturers' agent at St. Paul, Minn., has been appointed representative for the **National Lock Washer Company,** Newark, N. J., in Minneapolis and St. Paul.

R. F. Gordon, for the past several years assistant sales manager, has been appointed sales manager of the **Weir Kilby Corporation** of Cincinnati, Ohio, to succeed **J. K. Lansdowne,** vice-president and sales manager, who is retiring after more than 30 years' service with that company.

The Copperweld Steel Company, Glassport, Pa., has opened a district office at 122 South Michigan avenue, Chicago, to handle sales in Kentucky, Indiana, Michigan, Wisconsin, Illinois, Missouri, Iowa, Minnesota, North Dakota, South Dakota, Nebraska and Kansas. Heretofore, sales activities in these states have been handled by the Copperweld department of **Steel Sales Corporation. W. W. Ege,** who has been in charge of this department, has been appointed western sales manager and **E. G. Elg** has been appointed assistant western sales manager.

John J. Shapley, an engineer with the **General Railway Signal Company,** has been appointed sales engineer, with headquarters at St. Louis, Mo. Mr. Shapley served as assistant maintainer and maintainer for the Erie on automatic signals and all-electric and electro-mechanical interlocking and on June 1, 1926, entered the employ of the General Railway Signal Company, for which company he served as assistant general foreman in the United States and Canada and resident engineer at Rio de Janeiro, Brazil. Since August 15, 1940, he has been engaged on various assignments in the United States and South America.

Construction

ATCHISON, TOPEKA & SANTA FE.—A new freight house is being constructed in the China Basin area on Michigan street between Fourth and Alameda streets, San Francisco, Cal. The freight house will be of frame construction on a creosoted timber foundation, 50 ft. by 180 ft., and will have an open frame platform, 50 ft. by 180 ft.

COLORADO & SOUTHERN.—A contract has been awarded Walter H. Harris, Denver, Colo., for the construction of a one-story addition to the roundhouse at Denver, which will be used as a machine shop.

DENVER & RIO GRANDE WESTERN.—A contract has been awarded the Ross & White Co., Chicago, for a "Red Devil" locomotive engine coaler to be installed at Salida, Colo.

ERIE.—A contract has been awarded the Ross & White Co., Chicago, for the construction, including foundations, of a multiple-type N. & W. cinder plant at Youngstown, Ohio.

SEATTLE, WASH.—The State of Washington, Department of Highways, has awarded a contract amounting to $968,855 to MacRae Brothers, Seattle, Wash., for the construction of Spokane Street viaduct at Seattle, Wash., which will cross over six cross streets and 11 existing railway tracks. The total cost of the project, which will be approximately $1,065,741, will be borne by $340,000 from Federal aid crossing funds; $250,000 from the Chicago, Milwaukee, St. Paul & Pacific, the Great Northern, the Northern Pacific, the Oregon-Washington Railroad & Navigation Co. (part of the Union Pacific system) and the Pacific Coast Railroad Company; and the remainder from the City of Seattle. The viaduct will be 4,284 ft. long and will have a minimum roadway width of 45 ft. It will consist of 2,186 ft. of reinforced concrete viaduct, 949 ft. of steel viaduct, 842 ft. of treated timber trestle and 307 ft. of earth filled abutments. Four ramps for intermediate oncoming and offgoing highway traffic will also be constructed.

Financial

More Attention to Railroad Securities

More stock market attention has been paid to railroad securities in the past few weeks than for a good many years. This interest has not been reflected in high prices, but in the fact that carrier prices have not, this time, fallen as far as or farther than the "industrials" and "utilities". Railroad stocks, at time of writing, were at the highest levels since November, 1941, in contrast with industrial and utility stocks, which have dropped substantially lower. This trend has, as a matter of fact, been operating for some months.

The price changes in railroad securities as compared with other securities between the year-ends of 1940 and 1941, respectively, show this contrast:

Dow-Jones Averages	Year-End 1941	Year-End 1940	Per Cent Change
Railroad Stocks	25.42	28.13	–9.6
Industrial Stocks	110.96	131.13	–15.3
Utility Stocks	14.02	19.85	–29.3
Higher-Grade Railroad Bonds	90.49	95.27	–5.0
Second-Grade Railroad Bonds	48.85	50.19	–2.7
Defaulted Railroad Bonds	13.41	10.84	+23.7
40-bond Composite Average	88.11	90.90	–3.1

It will be noted that the bonds of roads in reorganization actually advanced 23.7 per cent on the average during 1941, while railroad stocks dropped only one-third as far as utilities and two-thirds as far as industrials. The above comparisons are based on year-end price levels; hence they ignore such facts as that railroad stock prices reached, during 1941, a high of 10 per cent above the 1940 year-end figure, whereas industrial stocks reached a high of less than 2 per cent above. These prices do not, of course, indicate railroad "prosperity".

The long-term trend of railroad stocks has been down—way down. For instance, the Dow-Jones average of railroad stock prices in 1921 attained a high of 77, while the high for industrial stocks was 81 in the same year. Comparison with 1940 and 1941 average prices shown in the table herewith discloses how this relationship between "railroads" and "industrials" has changed, the railroads stocks having "leveled off" at prices far below those of industrial stocks.

Probably the most important spur to the current interest in railroad securities is the possibility that railroads, by reason of high capital investment and earnings still at a modest rate on such investment, may suffer less from the excess profits tax than industrial concerns which earn profits at a much higher rate on the investment.

Other factors cited in investment circles as influencing investor interest include the assumption that regulation of other industry is just getting under way, while that of railroads has already done its damage. Appointment of J. B. Eastman as ODT head and his announced intention of preserving private operation in transportation is another factor. Other points considered of importance by stock market observers are the probable shortage of tires and motor vehicles and the attitude of the I. C. C. toward reasonably remunerative rates (as reflected in the passenger fare decision).

Some of the carriers are availing themselves of the opportunity to retire fixed-interest obligations, and other roads are expected to emulate this example. Class I carriers had cash on hand totaling $851,667,020 on October 30, 1941. This was the best cash position the roads had reported since 1920, and it may possibly represent the highest degree of liquidity the carriers ever attained. This accumulation was, of course, temporary and abnormal—including large sums the roads had put aside to protect themselves against the coming wage increase.

ARKANSAS VALLEY.—*Abandonment.*—This company has asked the Interstate Commerce Commission for authority to abandon all its interurban lines extending from Wichita, Kans., to Hutchinson, with a branch line from Van Arsdale, Kans., to Newton, 60 miles.

BRIMSTONE.—*Acquisition, Operation, and Stock.*—This company has been granted authority by Division 4 of the Interstate Commerce Commission to acquire and operate a line of railroad extending from a point of connection with a leased line of the Southern at New River, Tenn., southerly to a point near the confluence of Little and Mill Creeks, 12.4 miles. At the same time the company was authorized to

issue 250 shares of capital stock with a par value of $100 a share, to be sold at par and the proceeds used to pay the cost of rehabilitation of and improvements on the line to be acquired, and to provide working capital.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Trackage Rights.*—This company has asked the Interstate Commerce Commission for authority to acquire trackage rights over a portion of the line of the Baltimore & Ohio from a point of connection with the former's line and the B. & O. at West Dana, Ind., to the Wabash River Ordnance Works, being constructed by the federal government, 3.5 miles. The petition explains that the application merely seeks authority to permit the Milwaukee to serve the ordnance works.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC-CHICAGO, ROCK ISLAND & PACIFIC-KANSAS CITY SOUTHERN. — *Construction, Abandonment, and Joint Operation.*—These companies have been granted authority by Division 4 of the Interstate Commerce Commission to enter into joint agreements involving new construction, joint operation under trackage rights, and abandonments in Kansas City, Mo., and Kansas City, Kans., the effect of which would be to give these companies a better entrance into Kansas City, Mo. The most important part of the joint application, which was long and involved, dealt with the construction by the Chicago, Milwaukee, St. Paul & Pacific and the Chicago, Rock Island & Pacific of a new bridge over the Missouri River and a new line extending from Birmingham, Mo., to a connection with the Kansas City Terminal at Sheffield, 5.2 miles. In the application it was pointed out that the present bridge used by the roads was built in 1886 and must be rebuilt if it is to meet the needs of more powerful present-day locomotives. Instead of rebuilding the bridge, the three companies decided to build a new one at a different location, thus giving them better access to the Kansas City, Mo., industrial district.

The application was opposed by the railway labor unions, which took the position that the project would mean the displacement of a considerable number of employees. Division 4 found that from 18 to 23 employees would be dismissed as a result of the new arrangement, and acting under the mandate of the Harrington amendment to the Transportation Act of 1940, imposed "labor protection" provisions identical with those imposed last year in the Texas & Pacific operation case, Finance Docket 12843, details of which were set out in the *Railway Age* of July 19, 1941, page 128.

The labor unions had also objected that the proposed arrangement would not save any money and would be more complicated to operate on a joint basis. Examiner W. J. Schutrumpf had made a similar finding earlier in the case and would have had the commission deny the application.

"We are not impressed," declared Division 4 in reversing the examiner, "by the protestants' objections to the method by which the Milwaukee and the Southern propose to render freight service to the Kansas City area through their proposed joint agency arrangement. No doubt these applicants and their employees can satisfactorily adjust any difficulties which may arise."

CHICAGO & NORTH WESTERN.—*Abandonment.*—The Interstate Commerce Commission has denied the petitions of the State of Nebraska and the Nebraska State Railway Commission asking that the record in Finance Docket No. 13172, wherein this company was authorized to abandon a branch line extending from Linwood, Nebr., to Hastings, 102.6 miles, be reopened for further hearing. Under the commission's order, the abandonment will become effective on February 10.

CHICAGO, SOUTH SHORE & SOUTH BEND. —*Stock.*—This company has asked authority from the Interstate Commerce Commission to convert all its present capital stock into an issue of new common capital stock of a par value of $50 per share. As a result of the transaction, the capitalization of the company will be reduced from $7,471,900 to $3,895,200, or $3,576,700. The petition points out that the action will simplify the capital structure by eliminating all the preferred stock. The Midland Utilities Company is the beneficial owner of 98.97 per cent of the first preferred stock, 23.4 per cent of the second preferred stock, and 100 per cent of the common.

DENVER & RIO GRANDE WESTERN.—*Abandonment.*—This company has asked the Interstate Commerce Commission for authority to abandon a part of its Loma branch extending from Alamo, Colo., to the end of the track, 0.9 mile.

ERIE.—*Receivers for New York & Greenwood Lake.*—Judge Guy L. Fake appointed William Wyer of William Wyer & Co., Newark, N. J., and Judge Harry V. Osborne receivers for the New York & Greenwood Lake on January 21. Appointment of separate receivers for this subsidiary of the Erie was made in response to an application by the New York Trust Company, trustees for a mortgage covering the road. Among other things the new receivers are instructed to determine whether the New York & Greenwood Lake should undertake self-operation. At present the subsidiary owns no equipment and is operated as an integral part of the Erie system.

FLEMINGSBURG & NORTHERN.—*Deficit Status.*—Division 4 of the Interstate Commerce Commission has found that this company and its predecessor, the Cincinnati, Flemingsburg & Southeastern, are not entitled to benefit under section 204 of the Transportation Act of 1920, as amended January 7, 1941, and has dismissed their claims. Division 4 made the specific finding that the carriers did not sustain a decrease in their net railway operating income while under private operation in the federal control period.

GRANDE RONDE PINE. — *Acquisition.* — This company has asked the Interstate Commerce Commission for authority to acquire the capital stock of the Almanor. The lumber company proposes to acquire from the Almanor all of its capital stock in exchange for a line of railroad owned by the lumber company and extending from Clear Creek Junction, Calif., to Chester.

KANSAS CITY SOUTHERN.—*Purchase.*—This company has been authorized by Division 4 of the Interstate Commerce Commission to purchase a portion of the line of the Louisiana & Arkansas consisting of terminal property, in Shreveport, La. At the same time Division 4 dismissed those portions of the application relating to the purchase of certain buildings and land, and operation over the tracks of the L. & A. in Shreveport, La. The dismissal of certain parts of the application was occasioned by the fact that the trackage involved was a spur track and thus exempt from commission jurisdiction.

LIVE OAK, PERRY & GULF.—*Stock.*—This company has asked the Interstate Commerce Commission for authority to reduce its outstanding capital stock from $600,000 to $240,000 by exchanging, share for share, new stock of $40 par value per share for the outstanding stock of $100 par value. The action, according to the petition, is being taken to write off a deficit of $231,391. The petition goes on to declare that the reduction in capital stock and the exchange of shares will create a capital surplus and eliminate the existing surplus deficit.

MISSOURI PACIFIC.—*New reorganization plan.*—John W. Stedman, vice-president, Prudential Insurance Company, and chairman of the committee acting for holders of first and refunding 5 per cent mortgage bonds of this road, sent a letter to holders of these securities on January 31 attacking a new alternative reorganization plan outlined in a letter to Mo. P. bondholders from Robert R. Young, chairman of Alleghany Corporation, dated January 28 (reviewed in last week's *Railway Age*, page 319). Mr. Stedman attacked the alternative plan as a "tax avoidance scheme" and a dilution of present bondholders' equity by the creation of some $205,000,000 of new income bonds. The latter claims that the present plan of reorganization as certified by the I. C. C. is supported by more than $70,000,000 of first and refunding mortgage bonds represented by the committee and in addition by holders of over $100,000,000 of other bonds who have indicated their intention to support the plan.

Mr. Stedman's letter attacks the Alleghany Corporation's proposal on five counts, asserting that it is based on:

"(1) A transparent tax-avoidance scheme which has no likelihood of success.

"(2) An assumed improvement in the basic situation in the railroad industry, which does not exist and which Chairman Eastman of the Interstate Commerce Commission vigorously denied.

"(3) An undisclosed dilution of bondholders' security by the issue of approximately $90,000,000 additional bonds, coupled with an illegal violation of priorities and an undisclosed grant to Alleghany Corporation of additional new securities.

"(4) A misinterpretation of the reasoning and effect of recent court decisions.

"(5) A willingness to cause years of delay in effecting a plan of reorganization, possible irreparable damage to bondholders, and continued depressed market prices for the bonds."

On February 2 there appeared in metropolitan newspapers a statement "to holders of Missouri Pacific securities" from Mr. Young charging the Stedman committee with sacrificing others' investments in the

road in order to secure stock control of the system and "its future banking favors." Mr. Young's discussion of relations between the Stedman committee and Kuhn, Loeb & Co. follows in part:

"Kuhn, Loeb & Co., whose Mr. Bovenizer is a member of the Stedman Committee, underwrote over $58,000,000 of Missouri Pacific junior bonds, including the $11,152,000 of 5½ per cent convertible bonds which Alleghany Corporation owns. His and Mr. Stedman's committee now proposes to virtually wipe out these junior bonds, while at the same time seriously weakening the first and refunding bonds which Kuhn, Loeb also underwrote and sold. The Stedman-sponsored plan provides that the Stedman-Kuhn, Loeb committee will name nine out of the fifteen directors of the reorganized company and that your bonds will be largely translated into stock (which carries voting power)—not into income bonds, as advocated by Alleghany Corporation. Alleghany Corporation is an investor in railroad securities, not an underwriter or banker, and it has no interest in the control of the Missouri Pacific system or its future banking emoluments.

"Alleghany has saved millions of dollars for investors in various railroad securities, in the past, through its insistence upon the principle of competitive bidding by underwriters of railroad issues. To do this it has had to oppose Mr. Bovenizer and his financial clique. They are in the banking business. They want the inside track through control exercised over other people's money. These are the people who under Mr. Stedman's leadership, and in the name of various first-class insurance companies (whose heads, we are sure, do not realize what these gentlemen are doing), now seek to induce you to wipe out millions of valuation and earnings to which present day facts entitle you, in order to consolidate their inside track to banking favors in the Missouri Pacific system and other bankrupt railroads, through the issuance of stock instead of income bonds in exchange for your bona fide investment.

"We are confident that Mr. Stedman and his Kuhn, Loeb financial clique do not speak for Congress, the Treasury, the Interstate Commerce Commission or the courts. We do not believe that the heads of the insurance companies, under whose name (and with whose money) they get the ear of the investing public,—if they were aware of what was going on—would approve the Stedman committee's activities which are so patently in line with pre-S. E. C. banking practices."

NEW YORK CENTRAL.—*Abandonment.*—The Mount Gilead Short Line has been authorized by Division 4 of the Interstate Commerce Commission to abandon a line of railroad extending from a connection with the Cleveland, Cincinnati, Chicago & St. Louis at Edison, Ohio, to Mount Gilead, 1.2 miles. At the same time the New York Central and the Toledo & Ohio Central have been given permission to abandon the operation of the line.

The Beech Creek Extension and the New York Central have been authorized by Division 4 of the Interstate Commerce Commission to abandon a portion of a branch line and the operation thereof extending from Gorham Mine, Pa., southwesterly to Wilgus, 3.1 miles.

NEW YORK CENTRAL. — *Abandonment, Trackage Rights, & Operation.* — The Cleveland, Cincinnati, Chicago & St. Louis and the New York Central, respectively, have asked the Interstate Commerce Commission for authority to abandon all the line between Goshen, Ind., and Niles, Mich., and the operation thereof, except certain segments to be retained as yard and industrial tracks, 28.5 miles. The segments to be retained comprise 0.7 mile in Goshen, Ind.; 3.7 miles in Elkhart, Ind.; and one mile in Niles, Mich.

At the same time the Big Four seeks authority to acquire trackage rights over a line of the New York Central between Goshen, Ind., and South Bend, and over the Michigan Central from South Bend, Ind., to Niles, Mich. Also, in the same application the New York Central asks authority to operate under these trackage rights.

The petition goes on to explain that the Central has its own line between Goshen, Ind., and South Bend, and operates under lease the property of the Michigan Central between South Bend, Ind., and Niles, Mich. The Big Four also has its line from Goshen, Ind., to Niles, Mich., thus giving the Central two lines between South Bend, Ind., and Niles, Mich. A test, the petition declares, has shown that the traffic handled over both lines can be handled "as efficiently, more economically, and without unreasonable detriment to the public," over the line composed of the New York Central between Goshen, Ind., and South Bend, and of the Michigan Central between South Bend, Ind., and Niles, Mich.

However, it continues, in order to preserve the continuity of the Big Four's line between Rushville, Ind., and Benton Harbor, Mich., in the event that the Big Four, Michigan Central, and the New York Central should cease to be under common operation, it is proposed that the N. Y. C. and the M. C. shall grant trackage rights to the Big Four over the N. Y. C. between Goshen, Ind., and South Bend, and over the M. C. between South Bend, Ind, and Niles, Mich., such trackage rights to become effective in case the unabandoned portions of the Big Four's line between Rushville, Ind., and Benton Harbor, Mich., the portions of the N. Y. C.'s line and the M. C.'s line affected by such trackage rights shall cease to be under unified operation by the same corporation.

NORTHERN PACIFIC. — *Equipment Trust Certificates.*—This company has been authorized by Division 4 of the Interstate Commerce Commission to assume liability for $1,800,000 of 2⅛ per cent serial equipment trust certificates, maturing in 10 equal annual installments of $180,000 on February 16 in each of the years from 1943 to 1952, inclusive. The issue has been sold at 99.069 to Salomon Brothers & Hutzler, making the average annual cost to the company approximately 2.31 per cent.

PENNSYLVANIA-CENTRAL OF NEW JERSEY.—*Bonds of the New York & Long Branch.*—The New York & Long Branch has been authorized by Division 4 of the Interstate Commerce Commission to issue $2,932,000 of series B consolidated mortgage gold bonds, to be delivered to its proprietors, the Central of New Jersey and the Pennsylvania, in amounts of $1,460,000, and $1,472,000 respectively, to reimburse them for advances made for refunding general mortgage bonds and for capital improvements to the New York & Long Branch's property, and in exchange for and in satisfaction of general mortgage bonds held by them. The new bonds will bear interest at the rate of four per cent per year and will mature on September 1, 1981.

READING.—*Abandonment by the Gettysburg & Harrisburg.*—The Gettysburg & Harrisburg and the Reading, respectively, have asked the Interstate Commerce Commission for authority to abandon a portion of the Little Round Top Extension branch and the operation thereof extending from Gettysburg, Pa., to the end of the branch, 13,159 ft. The petition explains that a portion of the line lies in the Gettysburg National Military Park and the park authorities desire its removal.

RIVER TERMINAL.—*Deficit Status.*—Division 4 of the Interstate Commerce Commission has found that this company earned a net railway operating income in excess of 5¾ per cent per year on the value of its property and is not entitled to reimbursement under the provisions of section 204 of the Transportation Act of 1920, as amended January 7, 1941, for any losses suffered during the period of federal control. Division 4 found that the period of private operation was 20 months and five days, which would entitle the company to earn income at the rate of 9.66 per cent for the period, whereas it earned at the rate of 20.77 per cent. An order was entered dismissing the carrier's claim.

SOUTHERN.—*Abandonment by the Danville & Western.*—The Danville & Western has asked the Interstate Commerce Commission for authority to abandon a line extending from Fieldale, Va., west to Stuart, 26.5 miles.

ST. LOUIS SOUTHWESTERN OF TEXAS.—*Operation.*—This company has been authorized by Division 4 of the Interstate Commerce Commission to operate over a line of railroad to be constructed and owned by the United States Government extending from a connection with the company's line at Redwater, Tex., to Defense, a station to be established at the classification yard for the Lone Star Ordnance Plant and the Red River Ordnance Plant, a distance of approximately 7.2 miles.

TEXAS & NEW ORLEANS.—*Abandonment.*—This company has been granted authority by Division 4 of the Interstate Commerce Commission to abandon its branch line extending from Luling, Tex., to Lockhart, 14.7 miles.

TEXAS & PACIFIC.—*Abandonment by the Cisco & Northeastern.*—The Cisco & Northeastern has been authorized by Division 4 of the Interstate Commerce Commission to abandon its entire line extending from Cisco, Tex., northerly to Throckmorton, 65.5 miles. The commission's authority is granted subject to the condition that the company will sell the line or any part thereof to any responsible person, firm, or corporation offering within 40 days from the date of the order to purchase the line for continued operation and willing to pay not less than the fair net salvage value thereof.

Average Prices of Stocks and Bonds

	Feb. 3	Last week	Last year
Average price of 20 representative railway stocks..	29.11	29.51	29.60
Average price of 20 representative railway bonds..	66.10	66.41	62.89

Dividends Declared

Green Bay & Western.—$5.00, annually, payable February 18 to holders of record February 7. Debentures A, $50.00, payable February 18; Debentures B, $10.00, payable February 18.

Norfolk & Western.—$2.50, quarterly, payable March 19 to holders of record February 28.

Reading.—1st Preferred, 50¢, quarterly, payable March 12 to holders of record February 19.

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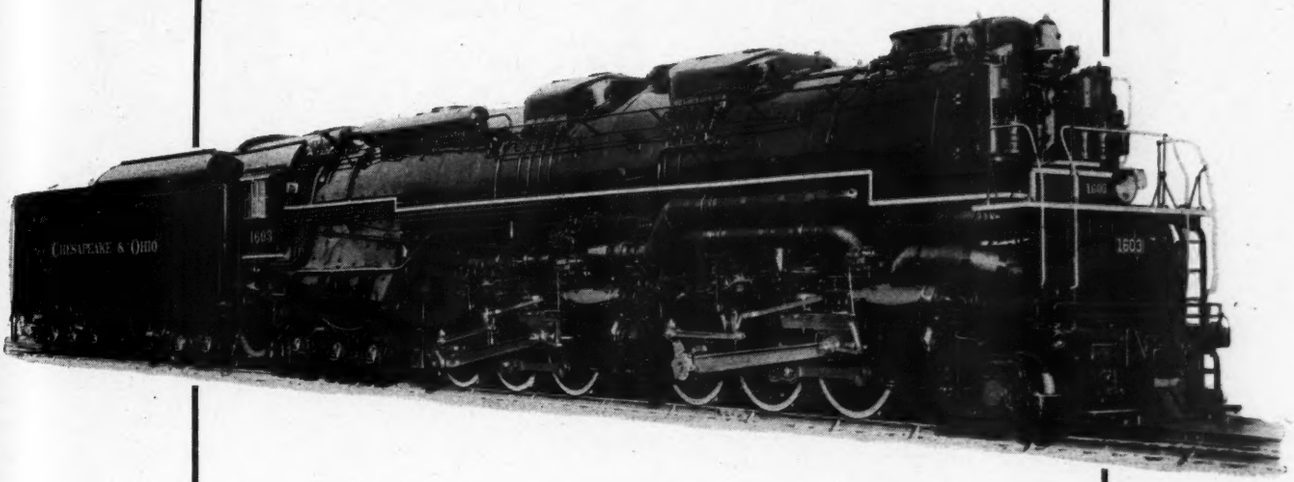
The "Allegheny Type"
LOCOMOTIVES



...of the Chesapeake & Ohio

The increasing demands that are being placed upon American Railroads are being met quickly and efficiently.

In anticipation of these demands the Chesapeake & Ohio purchased locomotives of a new and powerful design. These locomotives are the 2-6-6-6 "Allegheny Type" and the results being obtained are more than justifying their decision.

Lima is now building another lot of 10 of these same locomotives for the Chesapeake & Ohio which will be exact duplicates of the first lot. It pays to use Modern Power today.

LIMA LOCOMOTIVE WORKS, INCORPORATED, LIMA, OHIO

LIMA
LOCOMOTIVE WORKS
INCORPORATED

Railway Officers

EXECUTIVES

Louis Henry Windholz, whose election as active chairman of the board of the Norfolk Southern at Norfolk, Va., was reported in the *Railway Age* of January 31,

L. H. Windholz

was born at Syracuse, N. Y., on July 29, 1878. Mr. Windholz was co-receiver of the Norfolk Southern from July 28, 1932, until his recent election as chairman of the board. He has been associated for years with the Seaboard Air Line, of which he is a director. Up until the recent merger of the Chesapeake Steamship Company with the Baltimore Steam Packet Company, which latter line absorbed the former, he was chairman of the Baltimore Steam Packet Company. Prior to his entering the transportation field Mr. Windholz was for years connected with the old Fleischmann Yeast Company, now Standard Brands. Later, in 1926, he took over the presidency of the Pender Grocery Company, operating a chain of 500 stores in Virgina and North Carolina. Along with this operation, he became president of the Cavalier Hotel Corporation, which he still heads.

Arthur N. Reece, chief engineer of the Kansas City Southern and the Louisiana & Arkansas, in charge of engineering, new construction and standards, has been appointed assistant to the president, with headquarters as before at Kansas City, Mo. **Fred H. Hooper,** superintendent on the Kansas City Southern at Shreveport, La., has also been promoted to assistant to the president of the K. C. S. and the L. & A., with headquarters at Kansas City. Paul Sippel, assistant to the president of the L. & A., with headquarters at Shreveport, La., has been appointed assistant to the president on both roads, with the same headquarters and **G. P. Williams,** assistant to the president of the K. C. S., with headquarters at Beaumont, Tex., has been appointed assistant to the president on both roads, with the same headquarters. **S. W. Fordyce, III,** assistant to the president on the K. C. S., with headquarters at Kansas City, Mo., has been granted a leave of absence to serve with the Office of Defense Transportation at Washington, D. C., as reported in the *Railway Age* of January 24.

FINANCIAL, LEGAL AND ACCOUNTING

David N. Cochrane of Tuscaloosa, Ala., has been appointed acting claims attorney for the Gulf, Mobile & Ohio, succeeding **W. R. Rice,** who has entered military service.

C. G. Lehmann, head of the Railroad section of the Cleveland, Ohio, office of the Bureau of Internal Revenue, has been appointed assistant to the comptroller of the Erie, with headquarters at Cleveland.

John G. Wormick, assistant auditor of disbursements of the Reading, has been promoted to auditor of revenues, with headquarters as before at Philadelphia, Pa., succeeding **William E. Murphy,** who retired after 55 years of service. **Joseph B. Ashworth** has been appointed assistant auditor of revenues, succeeding **James W. Unruh,** who retired after 50 years of service. **Joseph A. Mickey** has been appointed assistant auditor of disbursements.

OPERATING

J. Arthur Loutzenhiser, trainmaster on the Bessemer & Lake Erie, has been promoted to assistant superintendent, with headquarters at Greenville, Pa.

E. M. Westbrook has been appointed assistant superintendent of the relief department of the Atlantic Coast Line, with headquarters at Wilmington, N. C., to succeed **H. E. O'Keef,** deceased.

H. B. Smith, assistant superintendent of the Radford division of the Norfolk & Western, with headquarters at Roanoke, Va., has been promoted to superintendent of the Pocahontas division, with headquarters at Bluefield, W. Va., succeeding **H. C. Wyatt,** whose appointment as assistant general superintendent of motive power at Roanoke is reported elsewhere in these columns.

H. J. Arnett, district manager, Car Service Division, Association of American Railroads, with headquarters at San Francisco, Cal., has been promoted to assistant to the chairman, at Washington, D. C. **R. S. Harlan,** assistant to manager, Military Transportation Section at Washington, has been appointed district manager at Detroit, Mich., succeeding **A. G. Warren,** who has been transferred to San Francisco, to succeed Mr. Arnett. **J. J. Kelley,** car service agent, Pittsburgh district, has been appointed assistant to manager, Military Transport Section, succeeding Mr. Harlan.

W. M. Christel, assistant superintendent of the Minneapolis-Duluth division of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Shoreham (Minneapolis), Minn., has been promoted to assistant to the general superintendent, with headquarters at Minneapolis, succeeding **A. H. Mann,** who has retired because of ill health. **V. Elliott,** assistant superintendent of the Stevens Point division, with headquarters at Ironwood, Mich., has been transferred to the Minneapolis-Duluth division, relieving Mr. Christel, and **P. Bryant,** trainmaster at Enderlin, N. D., has been promoted to assistant superintendent of the Stevens Point division, replacing Mr. Elliott.

TRAFFIC

Ted H. Banister, whose promotion to freight traffic manager in charge of industrial development on the St. Louis-San

Ted H. Banister

Francisco, with headquarters at St. Louis, Mo., was reported in the *Railway Age* of January 17, was born at Springfield, Mo., on Ocober 21, 1896, and entered railway service on July 1, 1924, as soliciting freight and passenger agent for the Frisco at Wichita, Kan. On September 1, 1927, he was transferred to Memphis, Tenn., and on May 1, 1928, he was promoted to commercial agent. On October 1, 1928, Mr. Banister was advanced to general agent at Memphis and on April 15, 1931, he was promoted to traffic manager at Birmingham, Ala., the position he held until his recent promotion.

Ralph B. Rogers, general passenger agent on the Erie, with headquarters at Cleveland, Ohio, has been promoted to pas-

Ralph B. Rogers

senger traffic manager, with the same headquarters, succeeding **Clarence C. Howard,** whose death on January 14, was reported

Continued on next left-hand page

THE PROGRESS REPORT OF THE RAILROAD DIVISION OF THE A.S.M.E. FOR 1940-41 STATES:

"... an outstanding event of the current year"

"The disclosure of the results of laboratory and road tests of this locomotive*, equipped wth the Franklin (oscillating-cam poppet-valve) system of steam distribution, is an outstanding event of the current year. In road tests, the locomotive, which has two 27-in. x 28-in. cylinders, 205 psi working pressure, and 80-in. drivers, developed a maximum horsepower of 2980 at 60-65 mph. Compared with the results of the A.A.R. passenger-train tests, previously reported in this series of papers, the gain in drawbar horsepower was 24 per cent at 60 mph, 33 per cent at 70 mph, and 44 per cent at 80 mph. With a 1000-ton train on level track, the poppet-valve engine attained 88 mph, and the original engine 78.5 mph. In general, the road tests showed the capability of the poppet-valve locomotive to meet the fastest schedules on the fast Fort Wayne-Chicago Division with trains of 13 cars. On the test plant, the locomotive developed a maximum indicated horsepower of 4267 at 75 mph and 4100 at 100 mph. With a steam consumption of 70,000 lb, the engine used about one seventh less steam per indicated horsepower at moderate speeds, and the improvement in economy increased to more than 30 per cent at 100 mph."

*The well-known K-4 Class of the Pennsylvania Railroad.

THE FRANKLIN SYSTEM OF Steam Distribution

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO

***In Canada:* FRANKLIN RAILWAY SUPPLY COMPANY, LIMITED, MONTREAL**

in the *Railway Age* of January 31. Mr. Rogers was born at Wellsville, N. Y., on October 23, 1894, and attended Maple City Business College. He entered railway service in 1912 as a stenographer on the New York Central at Corning, N. Y., and in May, 1912, he went with the Erie as night ticket agent at Hornell, N. Y. In 1915 he was promoted to assistant city passenger agent, later that year being appointed chief clerk in the passenger department. In 1926 Mr. Rogers was transferred to Jersey City, N. J., and in 1928 he was promoted to city ticket agent at New York. He was advanced to assistant to the passenger traffic manager, with headquarters at New York, in 1929 and in June, 1930, he was appointed general passenger agent, with headquarters at New York. His headquarters were transferred to Cleveland, Ohio, in 1931.

MECHANICAL

F. H. Einwaechter, Jr., has been promoted to mechanical engineer of the Baltimore & Ohio at Baltimore, Md., as reported in the *Railway Age* of January 10.

F. H. Einwaechter, Jr.

Mr. Einwaechter entered the service of the Baltimore & Ohio as apprentice in 1913. In 1917 he was promoted to draftsman and in July, 1923, he became leading draftsman. He was appointed assistant engineer at the Mount Clare shops in June, 1927, and in June, 1937, he was appointed assistant engineer in the locomotive department.

Alexander K. Galloway has been appointed general superintendent of motive power and equipment of the Baltimore & Ohio at Baltimore, Md., as reported in the *Railway Age* of January 10.

Mr. Galloway was born at St. Thomas, Ont., Canada, on October 1, 1885, and entered railroad service on June 1, 1902, as machinist apprentice with the Michigan Central, becoming a machinist on June 1, 1906. He then served successively as roundhouse foreman and general foreman for the Michigan Central. On November 1, 1914, Mr. Galloway went with the Baltimore & Ohio as acting master mechanic of the Baltimore division, becoming master mechanic on July 1, 1915, and general master mechanic at Cincinnati, Ohio, on July 20, 1916. On February 1, 1917, he was appointed district master mechanic at Baltimore. In April, 1927, Mr. Galloway was appointed superintendent motive power of the Baltimore & Ohio, becoming superintendent motive power and rolling equipment of the Reading and Central of New Jersey in November, 1936, which position he held at the time of his recent appointment as general superintendent of motive power and equipment of the Baltimore & Ohio.

A. K. Galloway

Frank H. Becherer has been appointed superintendent of the car department of the Baltimore & Ohio at Baltimore, Md., as reported in the *Railway Age* of January 10.

Mr. Becherer was born at New York on August 23, 1882, and entered railroad service in 1901 as billing clerk in the office of the master car builder of the Erie, subsequently becoming chief clerk in its car division. From 1907 until 1918 he served in various positions in the car department of the Pennsylvania and in 1919 became junior inspector of car equipment. During 1919 and 1922 he was senior mechanical engineer, Bureau of Valuation, Interstate Commerce Commission. In 1923 Mr. Becherer went with the Boston & Maine as mechanical inspector and was promoted to assistant to mechanical superintendent in 1925. He joined the Central of New Jersey in 1926 as superintendent car department and was promoted to assistant superintendent motive power and rolling equipment in 1930.

Frank H. Becherer

W. B. Whitsitt has been promoted to chief engineer of motive power and equipment of the Baltimore & Ohio, with headquarters at Baltimore, Md., in charge of research, design, standards and new construction, as reported in the *Railway Age* of January 10.

Mr. Whitsitt was born on May 27, 1883, and entered railroad service on March 16, 1903, as draftsman in the motive power department of the Baltimore & Ohio at Newark, Ohio, later being transferred to the Mount Clare shops at Baltimore. On October 1, 1915, Mr. Whitsitt became apprentice instructor, Mount Clare shops, and on September 1, 1917, he was appointed assistant chief draftsman, becoming chief draftsman on July 16, 1918. On October 1, 1922, he was appointed assistant mechanical engineer, being promoted to mechanical engineer on November 1, 1926, which position he held until June, 1937, when he became assistant chief of motive power and equipment, the position he held until his recent promotion.

W. B. Whitsitt

H. C. Wyatt, superintendent of the Pocahontas division of the Norfolk & Western, with headquarters at Bluefield, W. Va., has been promoted to assistant general superintendent of motive power, with headquarters at Roanoke, Va. Mr. Wyatt

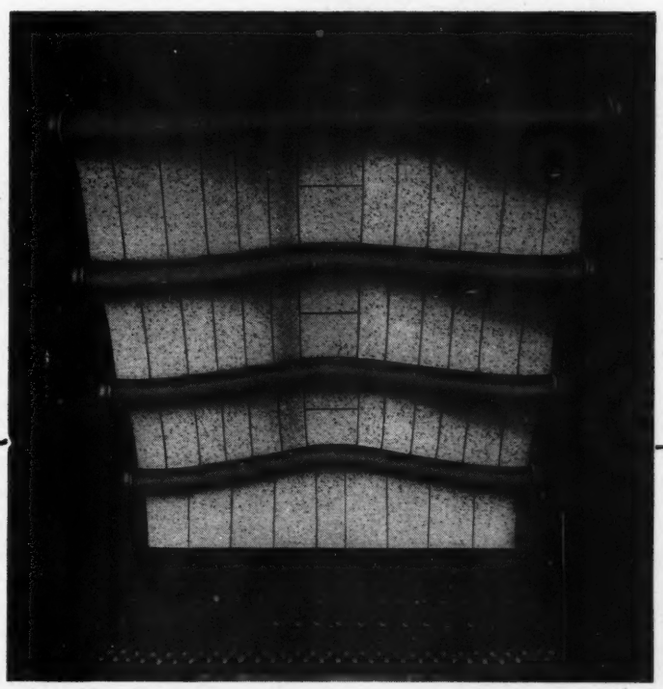
H. C. Wyatt

Continued on next left-hand page

A CORRECT BRICK ARCH GUARANTEES

FULL FUEL ECONOMY

There is a carefully worked out design of the Security Brick Arch for every class of locomotive . . . This design guarantees maximum efficiency both as to fuel economy and hauling capacity . . . In modernizing existing power and in maintaining locomotives in active service, be sure the correct brick arch design is installed and be sure it is completely maintained.



There's More to **SECURITY ARCHES** *Than Just Brick*

HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists

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INCORPORATED
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Locomotive Combustion Specialists

started working for the Norfolk & Western during school vacation periods, and in June, 1924, he was regularly employed as special apprentice in the Roanoke shops. Since that time he has served as shop inspector at Roanoke and Bluefield, special apprentice at Portsmouth, Ohio; assistant foreman and foreman at Iaeger, W. Va.; assistant road foreman of engines and general foreman at Columbus, Ohio. He was promoted to assistant master mechanic of the Radford and Shenandoah divisions in August, 1937, and two years later he became superintendent of the Shenandoah division. In December, 1940, he was transferred to the Scioto division and on January 1 of this year he was transferred to the Pocahontas division.

ENGINEERING & SIGNALING

F. H. Schultze, general foreman in the telegraph and signals department of the New York, Chicago & St. Louis (Nickel Plate), has been promoted to assistant superintendent of telegraph, with headquarters at Cleveland, Ohio. **J. M. Schroeder,** chief signal inspector, has been appointed general signal inspector, system, with headquarters at Cleveland, and **H. G. Stiebeling,** assistant signal supervisor of Conneaut, Ohio, has been advanced to general signal inspector, system, with headquarters at Cleveland. The position of chief signal inspector has been abolished.

William Scott Broome, whose promotion to engineer maintenance of way of the Colorado & Southern and the Ft. Worth & Denver City, with headquarters at Denver, Colo., was reported in the *Railway Age* of January 10, was born at St. Jo, Tex., on August 26, 1893, and graduated from the A. & M. College of Texas in 1914. He entered railway service in June, 1914, as a rodman on the Houston & Texas Central (now part of the Southern Pacific Lines in Texas and Louisiana) at Ennis, Tex., later serving as a transitman at Houston, Tex. In November, 1915, he went with the Atchison, Topeka & Santa Fe as a draftsman in the valuation department at Amarillo,

William Scott Broome

Tex., and from September, 1916, to January, 1918, he served as a field draftsman and transitman at various points in Texas, Oklahoma, New Mexico and Missouri. On the latter date, Mr. Broome went with the Forest Products Laboratory at Madison, Wis., as an assistant engineer. In December, 1918, he returned to Texas as assistant engineer on the Ft. W. & D. C. at Ft. Worth, Tex., later serving as division engineer at Childress, Tex., office engineer, with headquarters at Ft. Worth, and location and division engineer at Plainview, Tex. In November, 1928, Mr. Broome was appointed engineer of the Trinity & Brazos Valley (now the Burlington-Rock Island), with headquarters at Houston, and continued as engineer of the Burlington-Rock Island until his recent promotion, effective January 1.

SPECIAL

A. S. Kline, assistant chief special agent of the Missouri Pacific, with headquarters at Kansas City, Mo., has been promoted to chief special agent, with headquarters at St. Louis, Mo., succeeding **Robert S. Mitchell,** whose death on January 11 was reported in the *Railway Age* of January 17. **R. M. Hope** has been appointed assistant chief special agent at Kansas City, replacing Mr. Kline.

OBITUARY

C. D. Turner, general agent for the Erie at Chicago, died on February 1 at St. Luke's hospital in that city.

M. W. Jones, assistant editor of the Baltimore & Ohio magazine for the last 19 years, died suddenly at his home in Relay, Md., on February 1.

Hillman H. Harvey, who retired on November 1, 1938, as general car foreman of the Chicago, Burlington & Quincy, with headquarters at Chicago, died at his home in that city on February 1.

Andrew Howard Shaw, assistant to the passenger traffic manager of the Pennsylvania, with headquarters at New York, died suddenly on February 2 in the Lenox Hill hospital from a heart attack, at the age of 61. Mr. Shaw was born at Sharpsburg, Pa., on March 30, 1880, and was educated in the public and high schools of Sewickley, Pa. He entered the service of the Pennsylvania as a messenger boy on September 18, 1894, in its general offices at Pittsburgh, Pa., subsequently serving as stenographer, chief clerk to passenger traffic manager, assistant to general passenger agent and assistant general passenger agent at Pittsburgh, general passenger agent at Chicago, passenger traffic manager of the New York zone and general passenger agent of that zone. On May 16, 1941, he was appointed assistant to the passenger traffic manager at New York.

Col. Bion J. Arnold, widely known electrical and consulting engineer, known as the father of the third rail and at one time mechanical engineer for the Chicago Great Western, died at his home in Chicago on January 29. Col. Arnold was born at Casnovia, Mich., on August 14, 1861, and graduated from Hillsdale (Mich.) college in 1884, later obtaining his M.S. degree at Hillsdale in 1887, taking post graduate work at Cornell and obtaining his electrical engineering degree from the University of Nebraska in 1897. After serving as mechanical engineer for the Chicago Great Western he became consulting engineer for the Chicago office of the General Electric Company and later an independent consulting engineer. He designed and built the Intramural railway at the Chicago World's Fair in 1893, which was the first commercial application of the third rail in this country. He then served as consulting electrical engineer for numerous railways and planned, among other projects, the electrification of the St. Clair tunnel for the Grand Trunk (now the Canadian National) and the system for electrically operating trains of the New York Central in and out of New York. He later became a recognized authority on city traction problems and city planning and served as a member of the Chicago Railway Terminal Commission until 1921. Mr. Arnold was president of the American Institute of Electrical Engineers in 1903 and 1904, was president of the Western Society of Engineers in 1906 and 1907, and received the Washington Award from the latter society in 1929.

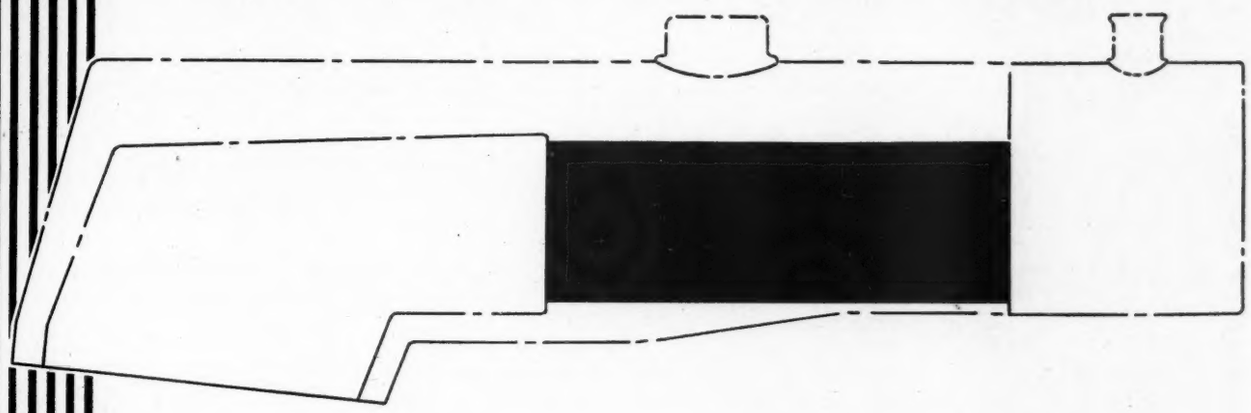
Clarence C. Howard, passenger traffic manager of the Erie, with headquarters at Cleveland, Ohio, whose death on January

Clarence C. Howard

14 was reported in the *Railway Age* of January 31, was born at New York on June 8, 1877, and entered railway service as a messenger on the New York & Northern (now a division of the New York Central). He served as traffic agent, telegraph operator, ticket agent, traveling auditor and train dispatcher, and in 1897 entered the passenger rate department of the New York Central. He then served successively for several years as rate clerk, chief rate clerk, chief clerk, assistant general passenger agent and general passenger agent of the New York Central's West Shore road. In 1918 Mr. Howard became associated with the Irving National Bank, now the Irving Trust Company, as assistant cashier and two years later was advanced to vice-president. In December, 1927, he returned to railroad service as passenger traffic manager of the Erie, with headquarters at New York, and in 1931 his headquarters were transferred to Cleveland.

Table of Revenues and Expenses begins next left-hand page

OTS does not determine Sq. Ft. of FLUE and TUBE Heating Surfaces that can be obtained



A boiler with a 21′6″ length Over Tube Sheets and equipped with a superheater for large flues . . . had 4200 sq. ft. of tube and flue heating surfaces.

The same boiler equipped with an Elesco superheater for small flues, had tube and flue heating surfaces of 4,641 sq. ft.—or an increase of 10.5%.

In addition, the superheating surface was increased by 79.3%.

These two factors contribute largely to a high sustained boiler capacity with highest boiler efficiency.

For new locomotives, be sure to specify this combination.

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SUPERHEATERS • FEEDWATER HEATERS
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REVENUES AND EXPENSES OF RAILWAYS

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1941

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income 1941	Net railway operating income 1940
Akron, Canton & Youngstown	Dec.	171	$242,989	$39	$252,842	$53,479	$26,083	$15,301	$81,354	$187,288	74.1	$65,554	$48,739	$35,848	—$16,322
	12 mos.	171	2,977,317	501	3,117,206	474,967	295,816	180,550	877,117	1,943,974	62.4	1,173,232	867,083	657,168	413,297
Alton	Dec.	959	1,420,733	335,599	2,009,413	230,614	275,124	57,943	797,817	1,455,420	72.4	553,993	439,482	259,178	168,605
	12 mos.	959	14,519,007	3,055,743	20,245,864	2,505,054	3,049,223	570,955	7,771,084	14,813,433	73.2	5,432,431	4,164,194	1,992,757	15,978
Atchison, Topeka & Santa Fe System	Dec.	13,418	17,223,582	2,227,835	21,458,077	2,341,935	4,187,426	571,960	7,805,457	15,275,675	71.2	6,182,402	4,202,713	4,223,695	3,431,666
	12 mos.	13,430	185,127,258	22,786,021	225,043,648	28,390,640	43,634,761	5,919,258	74,389,264	156,910,708	69.7	68,132,940	40,506,511	40,546,790	24,017,625
Atlanta & West Point	Dec.	93	159,395	41,231	232,286	29,244	38,837	10,772	119,739	215,753	92.9	16,533	2,202	—20,033	696
	12 mos.	93	1,796,664	385,918	2,491,044	246,475	362,988	108,477	963,546	1,820,350	73.1	670,694	401,493	202,137	11,114
Western of Alabama	Dec.	133	172,100	42,271	236,851	39,202	45,912	10,313	97,037	206,022	87.0	30,829	1,805	2,334	20,170
	12 mos.	133	1,826,403	392,978	2,466,901	332,943	423,503	101,895	869,769	1,849,715	75.0	617,186	316,180	299,760	178,842
Atlanta, Birmingham & Coast	Dec.	639	332,711	27,214	392,567	51,512	75,159	24,065	177,519	341,398	87.0	51,169	28,825	—8,145	—872
	12 mos.	639	4,071,175	326,212	4,662,498	601,085	721,658	295,878	1,857,116	3,656,206	78.4	1,006,292	602,272	213,791	—225,959
Atlantic Coast Line	Dec.	5,010	4,671,919	1,188,513	6,452,374	597,087	1,198,615	227,960	2,386,629	4,705,643	72.9	1,746,731	846,731	733,068	1,084,973
	12 mos.	5,080	49,826,243	11,817,851	67,404,252	5,909,763	12,245,257	2,041,062	23,938,837	46,859,449	69.5	20,544,803	12,894,803	11,080,953	3,757,234
Charleston & Western Carolina	Dec.	343	300,571	4,421	310,885	26,124	56,603	11,214	90,298	190,885	61.4	120,000	80,000	84,004	56,503
	12 mos.	343	3,310,882	34,736	3,414,204	349,927	501,054	116,615	1,022,936	2,066,652	60.5	1,347,552	852,552	814,606	428,680
Baltimore & Ohio	Dec.	6,362	16,593,701	1,323,823	19,153,859	1,920,517	4,839,065	404,860	1,173,915	15,010,928	78.4	4,142,931	2,323,521	1,912,010	2,816,751
	12 mos.	6,373	201,782,938	13,861,068	227,503,022	21,148,023	52,191,196	5,158,868	74,781,971	160,918,418	70.7	66,584,604	50,804,498	46,297,125	30,618,531
Staten Island Rapid Transit	Dec.	24	77,301	72,013	158,191	12,142	32,142	908	89,146	146,967	92.9	11,224	—16,359	—23,806	—26,193
	12 mos.	24	833,080	841,215	1,790,332	159,098	279,788	13,169	972,121	1,563,975	87.4	226,357	—92,998	—190,269	—288,982
Bangor & Aroostook	Dec.	603	474,852	32,224	531,686	63,551	78,564	5,252	146,570	319,217	60.0	212,469	140,659	165,163	143,043
	12 mos.	603	5,157,259	255,943	5,665,619	972,194	1,035,257	66,077	1,504,006	3,852,758	68.0	1,812,861	1,100,883	1,357,316	843,435
Bessemer & Lake Erie	Dec.	214	1,147,956	659	1,162,299	164,642	835,152	14,517	318,352	1,374,503	118.3	—212,204	—322,502	—209,394	249,373
	12 mos.	217	20,217,802	7,889	20,379,750	1,476,445	5,278,693	151,269	3,133,504	10,457,622	51.3	9,922,128	6,089,794	7,137,888	7,330,249
Boston & Maine	Dec.	1,866	3,929,866	754,241	5,290,708	570,373	879,480	63,341	2,142,126	3,887,238	73.5	1,403,470	1,773,352	1,468,195	830,527
	12 mos.	1,903	44,718,601	8,225,208	59,203,411	7,347,927	8,578,289	803,763	21,327,700	40,297,472	68.1	18,905,939	13,867,908	10,492,598	6,935,242
Burlington, Rock Island	Dec.	251	81,414	25,529	115,762	23,230	33,896	2,767	54,741	126,027	108.9	—10,265	—20,750	—26,088	—42,476
	12 mos.	252	857,467	264,814	1,224,114	207,693	202,594	48,263	532,190	1,115,485	91.1	108,629	—3,259	—61,536	—164,585
Cambria & Indiana	Dec.	38	180,628	.....	180,732	16,756	59,983	893	35,682	123,591	68.38	57,141	—13,588	60,891	95,292
	12 mos.	38	1,885,076	.....	1,886,372	132,072	724,956	5,668	195,466	1,135,427	60.19	750,945	51,304	857,299	954,447
Canadian Pacific Lines in Maine	Dec.	234	430,316	20,577	468,831	28,083	60,054	7,501	143,390	250,848	53.5	217,983	198,459	172,056	122,023
	12 mos.	234	3,338,028	220,595	3,743,434	472,104	663,241	80,775	1,292,517	2,585,883	69.1	1,157,551	975,969	693,516	561,497
Canadian Pacific Lines in Vermont	Dec.	91	123,019	9,949	144,918	29,048	30,515	2,386	92,282	160,456	110.7	—15,538	—25,759	—50,583	—59,906
	12 mos.	91	1,178,800	92,767	1,400,699	242,539	285,609	27,051	924,592	1,520,069	108.5	—119,370	—212,217	—488,916	—482,468
Central of Georgia	Dec.	1,815	1,804,275	221,107	2,209,059	194,225	311,477	66,431	848,544	1,504,386	68.1	704,673	557,171	517,548	237,276
	12 mos.	1,855	18,338,319	2,091,309	22,336,739	2,367,138	3,730,236	684,792	8,227,529	16,027,243	71.8	6,309,496	4,681,386	4,385,060	771,133
Central of New Jersey	Dec.	661	3,053,120	382,054	3,666,895	420,048	802,373	41,334	1,633,209	3,002,765	81.9	664,130	618,715	383,913	301,791
	12 mos.	694	36,130,725	4,605,943	43,357,579	4,400,254	8,957,004	558,011	17,237,475	32,372,721	74.7	10,984,858	7,369,542	5,088,050	1,364,795
Central Vermont	Dec.	422	587,096	34,221	656,733	85,916	104,169	4,029	287,214	503,692	76.7	153,041	119,626	81,730	101,666
	12 mos.	422	6,962,405	408,820	7,853,050	961,835	1,166,474	129,963	3,055,618	5,545,617	70.6	2,307,433	1,962,885	1,408,388	730,142
Chesapeake & Ohio	Dec.	3,124	11,256,699	505,408	12,153,069	1,088,907	2,391,495	229,102	3,163,001	7,242,133	59.6	4,910,936	6,097,342	6,286,479	3,390,454
	12 mos.	3,122	140,222,032	4,831,742	150,237,334	14,221,027	25,523,449	2,557,874	34,181,061	80,239,299	53.4	69,998,035	50,319,230	51,559,186	40,817,745
Chicago & Eastern Illinois	Dec.	925	1,304,409	233,212	1,731,206	138,874	291,958	60,454	643,404	1,208,098	69.8	523,108	343,608	223,061	274,520
	12 mos.	925	14,538,275	2,097,395	18,672,227	2,078,756	3,298,303	700,745	6,808,177	13,712,979	73.4	4,959,248	3,514,248	1,971,542	989,708
Chicago & Illinois Midland	Dec.	131	503,594	691	527,911	57,211	61,238	8,755	132,938	281,172	53.3	246,739	115,780	100,103	185,256
	12 mos.	131	5,150,254	7,718	5,404,100	693,915	784,150	246,851	1,239,512	3,201,859	59.2	2,202,241	1,181,469	1,080,904	1,269,177
Chicago & North Western	Dec.	8,267	7,014,901	1,345,994	9,421,079	1,310,793	2,083,307	173,947	3,797,809	7,726,220	82.0	1,694,859	938,579	738,000	1,569,400
	12 mos.	8,303	86,320,200	12,916,384	109,866,461	14,124,124	20,361,506	2,358,046	39,964,224	80,866,471	73.6	28,999,990	19,735,645	16,793,076	10,094,500
Chicago, Burlington & Quincy	Dec.	9,101	8,332,787	955,092	10,574,139	1,849,655	2,373,711	228,309	3,937,492	8,761,520	82.9	1,812,619	1,813,560	1,461,677	1,910,430
	12 mos.	9,036	94,874,259	10,697,250	117,521,355	16,959,394	19,816,532	2,974,810	39,526,886	83,047,925	70.7	34,473,430	22,573,020	19,135,005	13,082,778
Chicago Great Western	Dec.	1,502	1,731,461	61,610	1,935,270	203,968	218,677	68,203	693,609	1,249,675	64.6	685,595	505,895	192,671	367,860
	12 mos.	1,502	19,456,004	599,549	21,506,933	2,349,254	2,829,965	738,254	7,472,769	14,090,526	65.5	7,416,407	5,365,720	2,918,678	1,784,230
Chicago, Indianapolis & Louisville	Dec.	549	908,029	36,207	1,019,771	105,969	189,583	32,496	317,105	684,754	67.2	335,017	302,513	227,620	238,202
	12 mos.	549	9,562,974	409,285	10,864,059	1,085,715	1,842,212	333,018	3,449,310	7,093,009	65.3	3,771,050	3,256,332	2,224,062	1,329,102

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1941—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures	Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: 1941	1940
Chicago, Milwaukee, St. Paul & Pacific	Dec.	10,821	$10,385,908	$1,008,969	$12,532,391	$1,538,292	$2,322,063	$257,213	$4,650,167	$9,299,211	74.2	$3,233,180	$2,440,180	$2,062,946	$1,883,057
	12 mos.	10,846	117,246,205	9,646,900	139,646,122	20,043,659	22,782,449	2,819,676	47,028,458	97,765,536	70.0	41,880,586	32,644,586	28,181,975	13,845,644
Chicago, Rock Island & Pacific	Dec.	7,950	6,717,091	1,184,119	8,595,768	915,035	1,513,055	298,093	3,239,461	6,315,596	73.5	2,280,172	1,849,262	1,383,989	1,232,835
	12 mos.	7,955	79,086,441	10,924,931	96,962,499	12,544,942	15,957,791	3,327,354	33,300,975	69,105,057	71.3	27,857,442	21,997,212	17,616,382	8,133,477
Chicago, St. Paul, Minneapolis & Omaha	Dec.	1,629	1,539,861	172,535	1,848,038	167,563	271,395	46,932	817,410	1,372,370	74.3	475,668	349,762	246,373	120,462
	12 mos.	1,629	17,072,537	1,670,441	20,134,522	2,561,020	3,204,547	492,729	8,564,093	15,624,555	77.6	4,509,967	3,066,954	1,703,732	406,669
Clinchfield Railroad	Dec.	308	1,030,458	5,080	1,041,644	47,026	135,672	22,440	204,659	430,089	41.3	611,555	450,966	463,066	401,988
	12 mos.	308	11,006,518	58,032	11,136,236	559,696	1,559,479	243,430	2,048,181	4,628,414	41.6	6,507,822	5,267,392	5,390,038	3,672,086
Colorado & Southern	Dec.	755	571,066	55,552	601,877	123,905	169,608	13,504	196,477	534,769	88.9	67,108	27,986	5,709	81,980
	12 mos.	767	6,692,321	593,555	7,946,471	1,082,817	1,558,385	161,221	2,827,934	5,969,805	75.1	1,976,666	1,373,836	1,043,185	68,062
Fort Worth & Denver City	Dec.	804	561,063	106,356	793,343	56,891	94,328	21,036	222,236	430,281	54.2	363,062	326,620	292,916	59,299
	12 mos.	804	5,016,229	719,503	6,711,910	820,852	993,662	229,634	2,166,560	4,604,322	68.6	2,107,588	1,673,863	1,228,082	844,699
Colorado & Wyoming	Dec.	42	91,628	.....	141,434	10,257	10,875	885	58,837	86,077	60.9	55,357	28,417	27,758	45,082
	12 mos.	42	1,070,644	.....	1,642,688	125,745	127,065	8,999	534,240	850,322	51.8	792,366	424,047	416,979	409,738
Columbus & Greenville	Dec.	168	99,110	5,789	112,050	35,150	22,875	6,510	53,292	137,185	122.4	—25,135	—24,438	—21,682	—2,211
	12 mos.	168	1,233,838	41,042	1,352,301	198,094	210,721	61,748	458,245	1,085,432	80.3	266,869	116,609	117,586	67,202
Delaware & Hudson	Dec.	849	2,814,323	82,407	2,980,003	383,347	594,145	43,719	1,154,921	2,272,371	76.3	707,632	707,993	665,978	471,258
	12 mos.	849	32,132,801	977,331	34,170,493	3,510,144	6,240,570	518,739	11,460,621	22,767,796	66.6	11,402,697	9,065,022	8,497,736	5,619,258
Delaware, Lackawanna & Western	Dec.	985	4,409,874	643,951	5,568,770	486,643	740,215	116,670	2,482,190	3,989,110	71.6	1,579,660	890,328	838,414	857,647
	12 mos.	992	48,670,032	6,524,093	61,111,361	4,568,448	10,493,947	1,341,467	25,175,907	43,331,771	70.9	17,779,590	10,617,958	10,125,797	6,736,538
Denver & Rio Grande Western	Dec.	2,431	2,870,499	225,861	3,244,017	213,147	597,455	93,407	1,188,278	2,215,147	68.3	1,028,870	838,622	783,998	534,471
	12 mos.	2,517	28,418,356	1,747,741	31,572,624	3,441,923	7,316,467	1,056,015	11,180,539	24,219,120	76.7	7,353,504	4,918,297	4,517,079	2,761,157
Denver & Salt Lake	Dec.	232	215,123	5,930	232,624	Cr5,003	58,816	2,661	71,250	138,015	59.3	94,609	75,172	116,625	79,211
	12 mos.	232	2,278,615	60,518	2,459,879	332,830	547,568	31,655	773,458	1,803,473	73.3	656,406	356,613	915,334	911,293
Detroit & Mackinac	Dec.	242	83,325	2,588	92,239	8,327	10,741	710	29,026	52,265	56.7	39,974	36,564	30,398	2,006
	12 mos.	242	723,025	27,976	845,559	146,978	134,316	10,286	313,357	643,293	76.1	202,266	160,490	105,935	130,639
Detroit & Toledo Shore Line	Dec.	50	405,665	.....	406,751	32,633	26,514	9,861	107,212	184,356	45.3	222,395	114,495	49,323	85,947
	12 mos.	50	4,373,435	.....	4,385,087	345,603	295,298	106,455	1,098,678	1,937,177	44.2	2,447,910	1,598,130	842,353	842,634
Detroit, Toledo & Ironton	Dec.	465	663,278	343	707,087	32,553	107,563	15,376	191,541	375,417	53.1	331,670	368,711	351,582	261,095
	12 mos.	470	8,367,138	3,088	8,771,438	711,264	1,172,599	156,990	1,959,830	4,258,114	48.5	4,513,324	3,324,756	3,019,404	2,293,963
Duluth, Missabe & Iron Range	Dec.	542	564,185	2,172	662,763	570,660	445,993	5,500	407,127	1,463,409	220.8	—800,646	—1,649,173	—1,639,821	—1,071,713
	12 mos.	542	31,465,565	23,304	36,532,418	3,178,792	3,368,181	52,507	5,999,320	13,006,029	35.6	23,526,389	14,296,281	14,311,352	11,715,929
Duluth, Winnipeg & Pacific	Dec.	175	152,523	1,330	157,933	21,965	21,501	1,077	67,690	116,766	73.9	41,167	27,969	8,478	40,025
	12 mos.	175	1,633,353	13,366	1,689,986	311,608	262,154	23,501	686,242	1,328,459	78.6	361,527	227,910	32,423	34,584
Elgin, Joliet & Eastern	Dec.	390	2,354,180	20	2,657,830	213,576	514,542	19,504	1,077,725	1,888,189	71.0	769,641	399,474	211,325	590,971
	12 mos.	390	25,815,382	94	29,387,656	2,325,120	4,936,824	188,249	9,842,190	17,810,025	60.6	11,577,631	7,401,602	5,541,975	4,884,588
Erie	Dec.	2,251	8,054,968	455,218	9,038,592	760,971	1,780,217	205,904	4,102,150	7,188,886	79.5	1,849,706	1,274,186	869,332	1,288,028
	12 mos.	2,257	95,798,572	4,723,460	106,845,421	8,748,900	18,931,608	2,300,615	38,740,523	72,149,109	67.5	34,696,312	25,521,088	20,931,583	13,853,996
Florida East Coast	Dec.	685	698,705	321,846	1,196,468	164,507	179,964	39,689	438,227	905,463	75.7	291,005	311,201	285,633	201,092
	12 mos.	685	6,485,813	3,713,076	11,499,121	1,567,269	2,048,088	365,174	3,901,264	8,653,013	75.2	2,846,108	2,127,011	1,580,527	985,219
Georgia Railroad	Dec.	329	552,800	55,687	644,149	81,065	95,530	23,802	249,673	469,621	72.9	174,528	133,574	135,175	93,551
	12 mos.	329	4,934,934	350,029	5,615,529	640,792	842,101	233,261	2,067,538	3,956,415	70.5	1,659,114	1,435,820	1,437,454	744,358
Georgia & Florida	Dec.	408	168,950	2,914	178,699	20,292	16,361	9,319	53,342	113,860	63.7	64,839	51,302	38,258	3,010
	12 mos.	408	1,572,147	20,897	1,644,759	313,782	213,498	110,192	537,540	1,248,347	75.9	396,412	293,581	190,836	—68,789
Grand Trunk Western	Dec.	1,028	2,179,126	101,869	2,433,750	234,636	432,921	22,088	1,049,852	1,809,515	74.4	624,235	458,069	358,496	679,241
	12 mos.	1,029	27,394,545	989,413	30,391,495	3,252,397	5,155,671	451,332	11,427,860	21,132,800	69.5	9,258,695	7,607,725	6,154,930	3,934,745
Canadian National Lines in New England	Dec.	172	207,027	3,665	255,384	41,730	44,044	527	115,755	205,021	80.3	50,363	11,742	—40,509	25,498
	12 mos.	172	1,842,621	35,638	2,100,022	549,780	293,248	29,981	871,620	1,839,721	87.6	260,301	44,105	—500,343	—633,533
Great Northern	Dec.	8,077	8,402,897	501,693	9,672,871	1,277,342	1,904,028	230,101	3,454,680	6,962,357	72.0	2,710,514	1,751,695	1,284,614	266,258
	12 mos.	8,072	110,505,561	4,866,328	125,044,883	16,628,547	21,236,550	2,492,003	34,862,432	78,323,366	62.6	46,721,517	29,854,494	28,001,535	21,807,064
Green Bay & Western	Dec.	234	156,721	327	162,963	49,490	22,787	8,906	55,787	140,934	86.4	22,029	—11,694	8,474	42,916
	12 mos.	234	1,934,791	3,621	2,000,824	448,145	206,603	104,090	604,548	1,429,758	71.4	571,066	344,383	261,227	247,011
Gulf & Ship Island	Dec.	259	105,595	14,403	130,362	21,892	39,841	2,889	63,620	133,806	102.6	—3,444	—32,195	—44,372	8,033
	12 mos.	259	1,385,687	158,673	1,670,591	275,813	279,188	33,274	705,931	1,347,662	80.7	322,929	100,613	—38,541	—171,921

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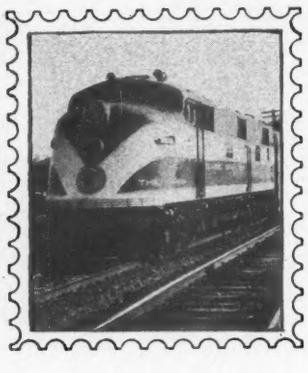
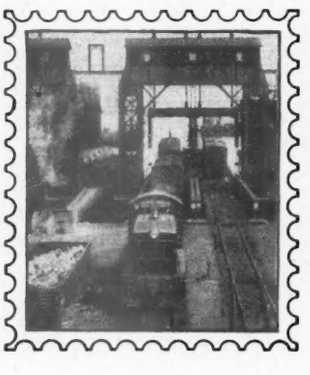
...RELIABILITY...





VITAL FOR

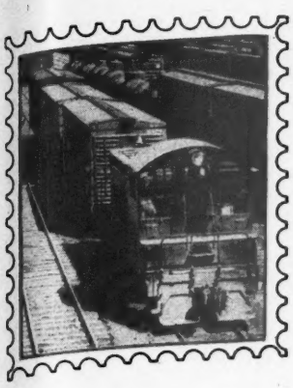
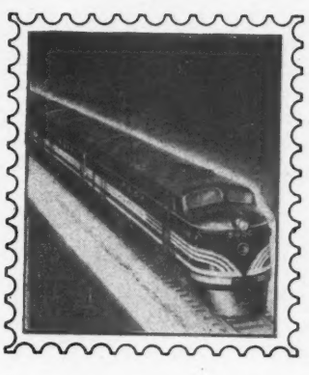
AT the present time, with the railroads operating at near capacity, every dollar and every hour saved speeds the day of absolute VICTORY. The operation of General Motors Diesel passenger and freight locomotives not only expedites deliveries by eliminating servicing delays required for steam locomotives, but makes possible a tremendous reduction in train miles operated. On many properties, the saving in train miles with GM 5400-Hp. Diesel freight locomotives runs as high as 50 per cent . . . Thus, the traffic carrying capacity of the railroads, particularly in single track locations, is substantially increased and, for every GM Diesel locomotive placed in operation, two to four steam locomotives can be released for other important service.

GENERAL MOTORS LOCOMOTIVES

MODERNIZE TO MOBILIZE WITH GM DIESELS

WHO SERVES THE RAIL

...SPEED...ECONOMY

VICTORY...

1 to 12

NOT only will GM Diesel switchers replace two to four times as many steam switchers, but they will save at least 10 per cent in switching hours... And equally important, one tank car of Diesel fuel oil will do the work of twelve cars of fuel oil or coal in a steam switcher... These savings make possible the release of hundreds of steam locomotives and thousands of cars for other important service.

ELECTRO-MOTIVE DIVISION
GENERAL MOTORS CORPORATION — LA GRANGE, ILLINOIS, U.S.A.

...ADS..SERVES AMERICA

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1941—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income 1941	Net railway operating income 1940
Gulf, Mobile & Ohio	Dec.	1,973	$1,879,501	$79,741	$2,039,387	$354,933	$436,699	$104,835	$785,979	$1,808,912	88.7	$230,475	$237,927	$134,912	$154,296
	12 mos.	1,973	22,122,767	619,770	23,647,846	3,377,493	3,721,102	1,039,671	6,834,230	16,126,523	68.2	7,521,323	5,025,968	3,661,460	1,505,525
Illinois Central	Dec.	4,951	9,404,644	1,287,673	11,458,012	1,235,272	2,354,707	219,539	4,107,517	8,342,337	72.8	3,115,675	2,408,074	2,311,668	2,352,416
	12 mos.	4,951	102,391,983	11,491,056	122,274,463	13,641,562	26,461,119	2,527,706	41,839,144	88,951,190	72.7	33,323,273	21,721,894	21,101,522	14,638,099
Yazoo & Mississippi Valley	Dec.	1,550	1,849,553	155,276	2,088,045	138,069	260,513	35,553	687,154	1,181,211	56.6	906,834	729,662	645,369	337,175
	12 mos.	1,578	18,079,446	1,051,440	20,163,863	1,753,226	2,893,080	392,867	7,112,908	12,777,876	63.4	7,385,987	5,542,771	4,801,729	2,121,051
Illinois Central System	Dec.	6,501	11,254,197	1,442,949	13,546,057	1,373,341	2,615,220	255,092	4,794,671	9,523,548	70.3	4,022,509	3,146,815	2,976,858	2,698,860
	12 mos.	6,529	120,471,429	12,542,496	142,438,326	15,394,788	29,354,199	2,920,573	48,952,052	101,729,066	71.4	40,709,260	27,242,269	26,012,414	16,865,461
Illinois Terminal	Dec.	476	455,339	80,653	593,729	72,349	88,858	15,193	203,338	395,854	66.67	197,875	131,121	109,195	82,428
	12 mos.	477	5,515,057	806,006	7,029,936	708,032	928,549	214,335	2,229,485	4,299,991	61.17	2,729,945	1,836,571	1,554,573	1,158,488
Kansas City Southern	Dec.	879	1,533,478	110,389	1,794,412	164,318	294,928	58,487	595,025	1,177,945	65.7	616,467	402,025	289,545	295,970
	12 mos.	879	16,693,641	888,247	19,163,035	2,193,936	3,005,822	693,969	5,448,613	12,103,925	63.2	7,059,110	5,247,668	4,083,546	3,420,043
Kansas, Oklahoma & Gulf	Dec.	328	209,115	640	212,099	20,155	12,870	13,009	65,013	124,337	58.6	87,762	42,119	23,577	61,312
	12 mos.	328	2,462,831	5,333	2,497,246	214,297	136,925	110,016	561,395	1,142,540	45.8	1,354,706	988,150	775,387	734,291
Lake Superior & Ishpeming	Dec.	156	37,219	69	40,567	28,454	49,366	515	37,118	133,220	328.4	—92,663	—103,216	—98,347	—158,234
	12 mos.	156	2,959,219	689	3,586,497	353,659	407,605	7,569	588,337	1,456,005	40.6	2,130,492	993,346	1,045,285	1,199,816
Lehigh & Hudson River	Dec.	96	213,225	.....	213,811	23,861	27,889	4,078	62,582	124,385	58.2	89,426	73,761	59,787	30,951
	12 mos.	96	2,247,228	.....	2,257,572	267,725	327,109	48,840	626,294	1,343,510	59.5	914,062	580,391	429,942	261,097
Lehigh & New England	Dec.	190	401,151	.....	404,182	35,507	95,787	7,015	135,753	291,019	72.0	113,163	71,514	80,387	102,176
	12 mos.	190	5,243,912	.....	5,282,487	404,105	912,970	90,348	1,567,353	3,164,700	59.9	2,117,787	1,359,253	1,388,190	1,197,280
Lehigh Valley	Dec.	1,263	4,304,954	226,983	4,828,253	305,885	785,396	112,445	2,256,695	3,618,470	74.9	1,209,783	784,553	472,311	696,105
	12 mos.	1,268	51,561,616	2,138,309	56,750,722	4,572,857	8,997,628	1,280,319	22,121,263	38,663,395	68.1	18,087,327	12,996,966	10,093,506	6,883,261
Louisiana & Arkansas	Dec.	881	881,999	37,291	955,585	119,115	38,039	25,331	307,643	526,456	55.1	429,129	285,321	215,135	173,961
	12 mos.	881	9,769,632	375,901	10,553,722	157,399	1,202,737	357,912	2,671,732	6,187,156	58.6	4,366,566	3,261,039	2,433,816	1,731,127
Louisville & Nashville	Dec.	4,803	9,314,690	1,033,127	10,983,690	1,344,328	2,200,534	200,554	3,388,883	7,468,432	68.0	3,515,258	1,329,001	1,490,498	1,742,065
	12 mos.	4,830	104,063,091	8,976,429	119,569,572	11,719,134	23,358,293	2,230,452	37,247,504	78,076,815	65.3	41,492,757	23,280,630	25,548,223	17,187,993
Maine Central	Dec.	991	1,049,864	114,069	1,268,487	141,227	269,334	15,584	473,140	974,410	76.8	294,077	265,155	235,859	282,776
	12 mos.	991	12,438,971	1,140,542	14,726,458	1,993,948	2,602,085	144,550	5,017,448	10,281,501	69.8	4,444,957	3,200,121	2,702,482	1,966,206
Midland Valley	Dec.	351	122,850	3	124,995	16,971	9,381	3,366	45,431	84,248	67.4	40,747	23,289	11,611	37,384
	12 mos.	352	1,443,092	56	1,473,161	170,458	109,841	30,011	400,760	784,322	53.2	688,839	546,127	425,152	346,446
Minneapolis & St. Louis	Dec.	1,409	910,443	9,955	959,299	73,428	174,649	85,844	367,261	787,198	82.1	172,101	114,944	95,761	177,539
	12 mos.	1,409	10,279,200	116,906	10,836,233	1,802,980	1,697,348	652,137	3,614,212	8,282,444	76.4	2,553,789	1,920,058	1,468,929	1,390,058
Minneapolis, St. Paul & Sault Ste. Marie	Dec.	4,277	2,554,146	87,988	2,829,440	468,138	874,449	69,045	1,234,287	2,731,457	96.5	97,983	—82,002	—333,606	118,933
	12 mos.	4,271	32,658,619	978,981	36,085,476	5,555,738	5,712,782	781,761	13,239,881	26,466,970	73.3	9,618,506	6,679,320	5,365,696	4,352,235
Duluth, South Shore & Atlantic	Dec.	550	192,018	10,863	219,239	41,626	41,572	9,008	114,032	213,934	97.6	5,305	—11,209	—20,223	—22,118
	12 mos.	550	3,009,084	93,530	3,367,250	665,786	512,770	90,822	1,146,338	2,494,352	74.1	872,898	677,802	627,466	279,722
Spokane International	Dec.	152	59,503	802	66,892	15,276	5,934	2,496	24,474	53,262	79.6	13,630	9,068	5,750	14,678
	12 mos.	152	854,346	7,603	945,424	200,741	80,848	27,993	280,420	638,923	67.6	206,501	247,789	197,702	150,095
Mississippi Central	Dec.	158	95,027	480	96,595	18,220	11,880	8,263	25,518	68,428	70.8	28,167	38,626	31,891	21,914
	12 mos.	158	1,138,446	23,327	1,177,387	290,795	141,070	94,781	271,233	848,701	72.1	328,686	262,328	187,420	—16,642
Missouri & Arkansas	Dec.	365	108,556	1,941	118,089	40,546	15,878	8,465	51,435	123,600	104.7	—5,511	—4,563	—16,910	—16,148
	12 mos.	365	1,253,179	18,343	1,359,196	347,233	153,784	94,318	463,001	1,130,332	83.2	228,864	163,198	31,382	41,212
Missouri-Illinois	Dec.	193	218,611	218	220,531	43,594	23,823	4,214	57,404	136,563	61.9	83,968	39,743	26,918	34,609
	12 mos.	193	2,643,948	2,341	2,667,203	393,227	276,198	39,788	638,141	1,414,445	53.0	1,252,758	752,480	585,212	474,791
Missouri-Kansas-Texas Lines	Dec.	3,293	2,630,567	323,242	3,284,015	381,326	432,215	106,617	1,170,910	2,242,390	68.3	1,041,625	825,760	621,582	330,227
	12 mos.	3,293	29,137,710	2,768,467	34,921,770	4,806,230	5,791,177	1,331,527	12,287,345	25,787,324	73.8	9,134,446	6,583,866	3,969,685	1,937,991
Missouri Pacific	Dec.	7,145	8,480,378	928,246	10,250,238	1,047,383	1,596,002	274,760	3,731,987	6,987,059	68.2	3,263,179	2,434,811	2,035,876	1,714,271
	12 mos.	7,142	94,629,147	8,175,488	111,900,737	14,754,015	18,704,782	3,042,644	36,628,480	76,601,953	68.5	35,298,784	27,678,889	23,033,729	10,083,018
Gulf Coast Lines	Dec.	1,772	1,900,470	70,354	2,071,953	241,780	231,083	49,270	566,441	1,141,946	55.1	930,007	850,390	702,014	140,846
	12 mos.	1,772	16,464,248	642,990	18,019,861	2,542,490	2,374,211	544,010	5,450,351	11,582,278	64.3	6,437,583	5,488,336	4,159,081	2,204,659
International Great Northern	Dec.	1,155	1,012,095	125,328	1,314,607	191,679	274,083	33,176	508,934	1,071,170	81.5	243,437	184,249	118,904	29,385
	12 mos.	1,155	11,384,795	1,174,850	14,075,033	2,172,505	2,515,368	358,744	5,396,008	11,145,785	79.2	2,929,248	2,151,875	1,334,669	—34,529
Monongahela	Dec.	172	533,354	615	535,358	41,424	42,309	484	128,213	215,978	40.3	319,380	263,625	165,666	75,493
	12 mos.	172	5,888,394	6,912	5,921,429	502,765	402,861	6,350	1,290,599	2,241,854	37.9	3,679,575	3,028,917	1,989,771	1,430,896

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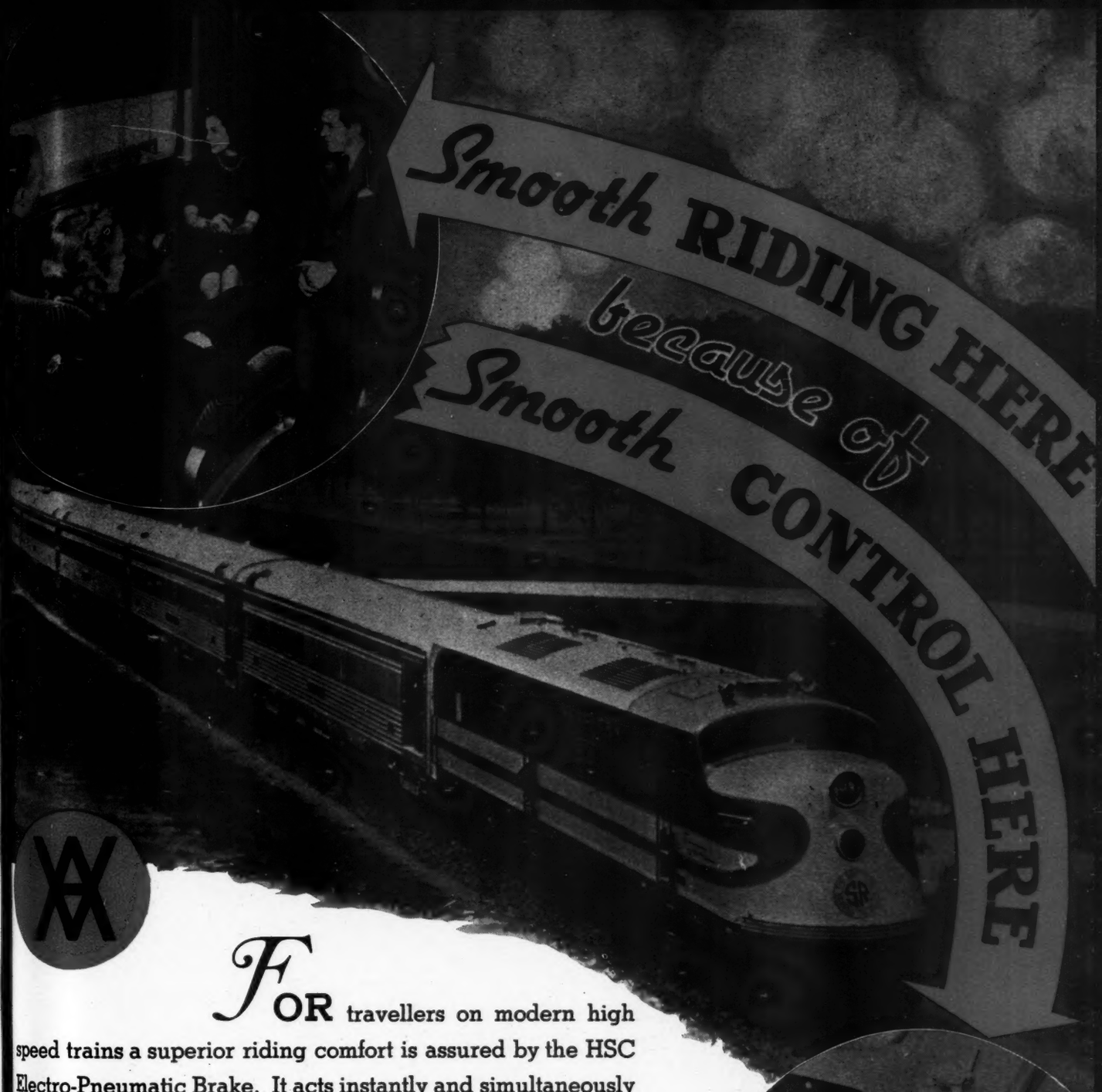

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Electro-Pneumatic BRAKES

WESTINGHOUSE AIR BRAKE CO. ★ Wilmerding, Pennsylvania

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1941—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income 1941	Net railway operating income 1940
Montour	Dec.	51	$178,554	.....	$180,499	$16,306	$54,855	$919	$64,673	$149,826	83.0	$30,673	–$8,031	$35,624	$27,315
	12 mos.	51	2,385,761	$97	2,402,647	160,460	560,199	8,910	592,920	1,414,720	58.9	987,927	461,850	826,403	875,040
Nashville, Chattanooga & St. Louis	Dec.	1,111	1,489,922	214,188	1,874,571	197,833	245,571	69,937	743,514	1,304,371	69.6	570,200	371,925	345,747	363,932
	12 mos.	1,111	16,257,795	1,706,194	19,668,767	1,951,830	3,267,310	843,461	7,355,952	14,128,156	71.8	5,540,611	3,685,071	3,309,419	2,069,426
Nevada Northern	Dec.	165	58,491	579	62,049	6,078	2,847	1,195	11,084	28,206	45.5	33,843	8,325	9,460	–7,789
	12 mos.	165	650,545	6,910	704,646	115,243	37,643	15,473	126,286	372,295	52.8	332,351	168,379	191,241	239,815
New York Central	Dec.	10,939	30,162,140	7,342,672	41,316,307	7,742,830	9,098,290	560,652	16,136,399	35,099,648	85.0	6,216,659	5,135,209	3,737,273	7,085,719
	12 mos.	10,941	336,878,403	66,609,863	447,789,655	53,156,074	92,454,568	6,667,758	162,457,180	331,438,111	74.0	116,351,544	72,039,715	57,418,760	44,052,437
Pittsburgh & Lake Erie	Dec.	232	2,459,695	55,787	2,589,325	262,274	740,443	36,813	758,673	1,897,324	73.3	692,001	439,049	854,456	535,222
	12 mos.	232	28,688,599	556,277	30,044,031	2,647,943	9,290,240	445,833	8,433,263	21,859,604	72.8	8,184,427	2,866,219	7,491,014	5,591,525
New York, Chicago & St. Louis	Dec.	1,702	5,192,228	88,898	5,399,430	436,064	702,330	114,097	1,846,700	3,230,312	59.8	2,169,118	2,501,989	2,141,764	1,060,991
	12 mos.	1,703	57,860,663	906,906	60,219,289	5,269,425	7,790,544	1,474,960	18,882,948	34,961,299	58.1	25,257,990	21,678,426	17,568,115	8,492,405
New York, New Haven & Hartford	Dec.	1,839	6,030,826	2,981,291	9,856,324	1,128,610	1,563,435	160,003	3,897,683	7,208,696	73.1	2,647,628	2,965,451	2,164,289	1,542,142
	12 mos.	1,848	67,409,034	30,849,206	107,541,356	12,695,363	18,847,540	1,512,304	38,853,998	74,867,757	69.6	32,673,599	25,946,172	16,924,935	9,274,354
New York Connecting	Dec.	21	203,276	.....	213,870	70,189	11,103	.....	47,864	131,066	61.3	82,804	39,726	82,192	174,762
	12 mos.	21	4,093,234	.....	4,222,939	642,341	126,289	.....	454,734	1,240,772	29.4	2,982,167	2,439,919	2,806,114	1,451,881
New York, Ontario & Western	Dec.	547	435,297	7,182	483,993	63,149	100,469	19,491	251,877	457,217	94.50	26,776	40,554	347	–37,018
	12 mos.	571	5,263,809	351,323	6,186,516	646,457	1,281,588	216,758	3,138,777	5,527,705	89.4	658,811	208,638	–216,026	–716,776
New York, Susquehanna & Western	Dec.	274	256,227	28,689	314,812	23,549	35,393	2,849	145,296	218,547	69.4	96,265	64,264	24,120	42,180
	12 mos.	150	3,179,221	325,751	3,692,675	278,928	333,506	32,316	1,457,779	2,227,885	60.3	1,464,790	1,101,883	657,851	439,086
Norfolk & Western	Dec.	2,181	8,889,501	389,857	9,575,666	668,455	1,645,140	150,339	2,114,548	4,818,585	50.3	4,757,081	1,555,413	2,040,574	2,407,934
	12 mos.	2,189	113,337,080	3,734,512	120,176,914	11,837,483	22,698,404	1,838,983	24,636,037	63,638,982	53.0	56,537,932	24,398,570	29,067,278	33,254,232
Norfolk Southern	Dec.	733	512,567	12,026	539,695	50,918	65,210	27,699	199,745	353,979	65.6	185,716	116,389	143,991	37,339
	12 mos.	733	5,401,413	69,936	5,640,838	932,246	707,437	305,268	1,957,964	4,137,478	73.4	1,503,360	1,119,112	849,318	247,605
Northern Pacific	Dec.	6,889	6,911,981	572,748	8,087,511	1,123,226	1,727,964	162,992	2,791,885	6,131,790	75.8	1,955,721	1,196,254	1,305,571	1,590,745
	12 mos.	6,760	74,289,243	4,447,358	85,346,327	10,381,525	16,366,945	2,077,340	27,508,123	59,909,720	70.2	25,436,607	16,168,913	19,922,776	13,583,074
Northwestern Pacific	Dec.	345	237,690	7,704	268,211	108,772	53,250	2,640	139,145	328,412	22.4	–60,201	–82,690	–93,183	–45,186
	12 mos.	350	3,181,481	124,239	3,526,670	849,601	602,215	31,142	1,554,964	3,300,539	93.6	226,131	–9,564	–200,340	–361,703
Oklahoma City-Ada-Atoka	Dec.	132	59,333	.....	59,790	12,702	3,137	937	19,722	38,565	64.5	21,225	17,399	7,584	–2,673
	12 mos.	132	349,352	Dr. 6	355,014	83,323	13,397	8,651	120,927	242,648	68.3	112,366	79,302	23,163	–17,523
Pennsylvania	Dec.	10,215	41,381,899	9,155,103	54,779,913	6,624,847	11,374,746	830,270	20,243,435	40,784,782	74.5	13,995,131	9,785,265	8,813,370	9,098,888
	12 mos.	10,241	477,008,587	89,022,891	614,041,163	67,466,477	134,901,608	8,984,652	214,127,540	442,677,275	72.1	171,363,888	105,204,340	97,102,488	86,499,486
Long Island	Dec.	378	690,550	1,329,499	2,131,319	236,236	347,372	9,620	1,032,014	1,702,066	79.9	429,253	160,877	–7,965	3,921
	12 mos.	379	8,948,113	16,532,476	26,839,398	2,831,429	4,230,782	116,092	12,036,449	19,784,572	73.7	7,054,826	2,993,517	767,881	757,887
Pennsylvania-Reading Seashore Lines	Dec.	406	404,571	99,019	526,321	126,384	78,817	4,797	323,921	551,084	104.7	–24,763	–79,307	–162,702	–260,396
	12 mos.	410	4,574,434	2,714,304	7,629,929	1,117,446	1,121,243	89,267	3,995,971	6,515,530	85.4	1,114,399	280,338	–990,589	–2,490,814
Pere Marquette	Dec.	2,085	2,988,203	99,907	3,233,336	542,947	644,012	67,337	1,251,101	2,617,287	80.9	616,049	427,688	371,488	467,568
	12 mos.	2,100	35,895,153	1,089,319	39,048,003	50,538,843	7,468,478	800,583	13,760,897	28,362,515	72.6	10,685,488	7,282,099	6,115,395	4,063,208
Pittsburg & Shawmut	Dec.	98	108,393	.....	109,519	20,265	23,550	1,984	28,970	80,486	73.5	29,033	24,523	22,385	–11,659
	12 mos.	98	1,064,166	.....	1,070,865	159,847	225,704	22,066	268,894	725,987	67.8	344,878	308,851	242,659	237,390
Pittsburgh & West Virginia	Dec.	136	417,279	31	433,177	58,027	99,029	23,022	121,550	314,040	72.5	119,137	160,232	172,704	–35,206
	12 mos.	136	5,057,026	527	5,283,114	850,937	946,518	228,914	1,118,882	3,422,616	64.8	1,860,498	1,587,575	1,654,399	800,209
Pittsburg, Shawmut & Northern	Dec.	190	115,932	.....	118,169	17,734	23,231	1,080	49,170	97,291	82.3	20,878	16,604	11,139	39,347
	12 mos.	190	1,512,833	.....	1,527,608	198,714	250,141	12,963	520,289	1,052,237	68.9	475,371	403,185	282,931	247,131
Reading	Dec.	1,431	6,328,752	357,891	6,999,458	663,516	1,597,631	81,463	2,621,991	5,036,968	72.0	1,962,490	1,382,782	1,237,192	1,567,492
	12 mos.	1,436	72,463,335	3,626,088	79,566,095	6,538,561	16,130,282	858,105	27,556,101	52,921,507	66.5	26,644,588	17,326,524	16,152,539	13,460,806
Richmond, Fredericksburg & Potomac	Dec.	118	708,327	592,727	1,551,822	113,656	190,631	11,449	467,809	840,578	54.2	711,244	471,283	383,515	194,937
	12 mos.	118	7,609,836	4,845,731	14,039,903	1,215,901	2,038,200	116,386	4,407,647	8,419,598	60.0	5,620,305	3,429,396	2,618,024	1,075,988
Rutland	Dec.	407	221,437	28,572	312,240	17,843	64,610	11,337	160,081	263,856	84.5	48,384	29,546	34,522	1,996
	12 mos.	407	2,754,882	325,766	3,772,088	417,933	758,257	127,530	1,866,712	3,303,778	87.6	468,310	249,369	267,307	–92,534
St. Louis-San Francisco	Dec.	4,766	4,457,853	621,882	5,556,592	745,143	1,118,498	154,406	2,506,456	4,763,756	85.7	792,836	424,772	439,292	956,079
	12 mos.	4,767	49,756,213	4,900,875	59,326,160	7,086,358	11,633,077	1,499,065	21,039,440	43,457,272	73.3	15,868,888	11,746,617	11,997,351	5,395,121
St. Louis, San Francisco & Texas	Dec.	159	142,801	965	149,514	28,882	20,543	10,569	73,916	140,705	94.1	8,809	–2,050	–26,542	2,169
	12 mos.	159	1,784,082	20,827	1,868,031	281,877	187,240	100,895	692,065	1,327,806	71.1	540,225	436,146	128,046	–211,197

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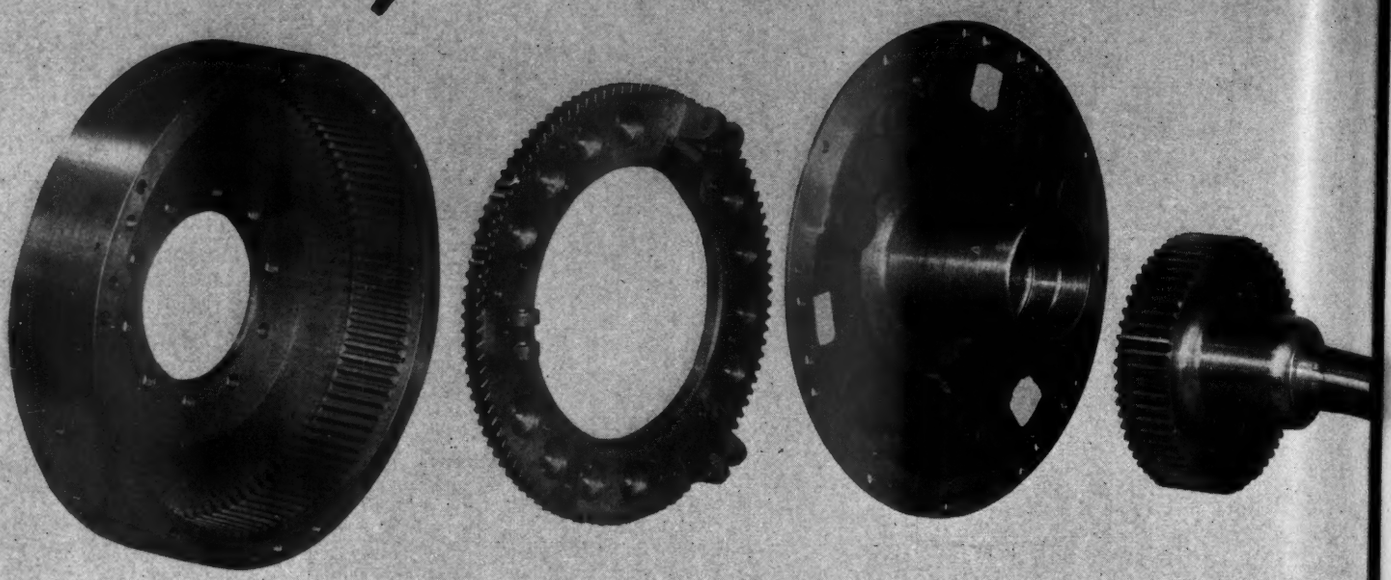
REVENUES AND EXPENSES OF RAILWAYS

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1941—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income 1941	1940
St. Louis Southwestern Lines	Dec.	1,617	$2,549,985	$84,169	$2,740,441	$354,004	$363,088	$71,364	$842,177	$1,700,936	62.1	$1,039,505	$1,531,191	$1,400,618	$338,535
	12 mos.	1,622	26,644,830	662,443	28,256,047	4,073,085	3,754,693	1,048,986	7,640,965	17,526,198	62.0	10,729,849	9,157,273	7,495,071	2,795,591
Seaboard Air Line	Dec.	4,307	4,912,672	1,182,787	6,647,681	781,479	1,192,411	206,522	2,472,541	4,937,735	74.3	1,709,946	1,430,135	1,188,550	1,024,192
	12 mos.	4,309	48,476,540	11,026,177	64,608,903	8,523,886	12,252,878	2,285,734	22,746,425	48,800,722	75.5	15,808,181	11,945,870	10,106,964	4,404,333
Southern Railway	Dec.	6,519	10,521,848	1,598,902	13,086,290	820,623	3,164,933	134,654	4,349,464	8,897,304	68.0	4,188,986	3,511,510	3,254,989	2,883,299
	12 mos.	6,552	116,520,375	14,232,779	139,926,434	13,985,805	24,432,818	2,139,416	43,502,952	88,547,313	63.3	51,379,121	35,827,053	32,789,981	21,457,294
Alabama Great Southern	Dec.	315	837,043	160,421	1,067,254	Cr. 13,829	213,767	14,438	334,374	581,569	54.5	485,685	183,755	164,192	181,263
	12 mos.	315	9,143,797	1,269,901	11,102,951	1,000,704	2,173,203	200,419	3,093,130	6,801,831	61.3	4,301,120	2,403,070	2,331,666	1,697,157
Cincinnati, New Orleans & Texas Pacific	Dec.	337	1,665,162	212,309	2,002,958	Cr. 82,591	559,541	21,048	516,864	1,077,846	53.8	925,112	397,709	406,928	590,682
	12 mos.	337	19,676,012	1,859,009	22,621,592	1,838,605	4,712,851	367,883	5,465,188	13,078,386	57.8	9,543,206	5,787,214	5,958,047	4,998,100
Georgia Southern & Florida	Dec.	398	192,811	64,789	294,404	52,057	56,188	1,695	119,603	239,437	81.3	54,967	74,124	53,501	175,660
	12 mos.	398	2,637,131	565,134	3,594,411	510,985	577,389	28,657	1,318,788	2,544,321	70.8	1,050,090	803,469	524,290	494,382
New Orleans & Northeastern	Dec.	204	438,679	83,977	555,495	53,054	51,328	7,258	147,834	268,099	48.3	287,396	195,453	154,001	161,946
	12 mos.	204	4,567,746	716,459	5,613,872	549,651	493,429	100,242	1,422,000	2,764,840	49.3	2,849,032	1,828,198	1,426,799	675,770
Southern Pacific	Dec.	8,581	16,477,073	3,140,148	21,578,500	2,246,959	4,055,966	454,110	9,584,587	17,574,192	81.4	4,004,308	2,546,465	1,552,192	3,444,551
	12 mos.	8,592	189,163,281	26,501,019	232,899,215	21,983,333	37,985,059	4,644,719	83,855,066	159,998,102	68.7	72,901,113	56,101,097	44,436,280	26,751,574
Southern Pacific Steamship Lines	Des.	....	Dr. 13,915	25	Dr. 13,400	3,418	1,367	Cr. 1,929	Cr. 9,996	Cr. 2,608	...	–10,792	–11,379	–11,379	–214,197
	12 mos.	....	4,163,665	54,500	4,444,995	297,493	498,374	85,419	3,106,813	4,247,608	95.6	197,387	33,986	19,574	77,020
Texas & New Orleans	Dec.	4,417	5,082,380	652,312	6,198,883	986,176	873,011	139,197	1,985,584	4,246,015	68.5	1,952,868	1,486,631	1,188,186	1,177,659
	12 mos.	4,417	51,114,053	5,040,798	60,442,116	7,882,834	9,523,348	1,557,933	18,179,697	39,739,917	65.7	20,702,199	16,236,690	12,981,447	5,637,265
Spokane, Portland & Seattle	Dec.	939	1,135,359	36,052	1,247,448	225,338	104,530	11,233	445,312	821,416	65.8	426,032	344,035	228,082	148,941
	12 mos.	945	12,132,719	398,615	13,289,042	2,225,146	1,141,017	130,637	4,246,345	8,136,869	61.2	5,152,173	4,222,938	3,030,159	1,282,076
Tennessee Central	Dec.	286	224,836	6,306	247,030	54,271	46,325	6,205	95,152	209,863	85.0	37,167	35,229	25,088	46,907
	12 mos.	286	2,700,435	55,939	2,937,785	512,939	468,082	86,310	992,920	2,185,033	74.4	752,752	536,280	402,350	310,615
Texas & Pacific	Dec.	1,892	2,524,910	504,178	3,350,247	433,009	534,548	82,331	1,027,776	2,246,137	67.0	1,104,110	799,012	766,475	442,778
	12 mos.	1,890	26,636,172	3,410,078	32,839,670	3,679,083	5,919,896	930,152	9,607,166	21,663,738	66.0	11,175,932	7,923,822	6,938,074	4,875,692
Texas Mexican	Dec.	162	97,768	284	116,799	34,152	14,328	4,407	49,370	110,975	95.0	5,824	–4,533	–10,363	–7,899
	12 mos.	162	1,192,486	3,373	1,388,893	215,385	142,807	39,957	431,752	918,465	66.1	470,428	373,114	304,385	85,889
Toledo, Peoria & Western	Dec.	239	159,174	.....	160,952	35,866	18,229	24,972	61,632	169,333	105.2	–8,381	45,483	34,095	109,220
	12 mos.	239	2,734,107	22	2,775,366	444,541	196,672	234,185	615,588	1,674,161	60.3	1,101,205	627,379	418,381	420,795
Union Pacific System	Dec.	9,871	17,670,004	2,262,207	21,745,455	1,595,327	3,844,096	394,023	7,325,708	14,070,105	64.7	7,675,350	6,804,904	5,987,133	3,865,090
	12 mos.	9,878	180,272,442	21,554,471	218,091,994	26,981,583	45,803,175	5,246,945	71,621,705	159,997,894	73.4	58,094,100	40,309,458	30,535,373	23,358,960
Utah	Dec.	111	102,819	.....	102,884	11,911	25,036	410	28,501	70,598	68.6	32,286	20,266	20,606	25,884
	12 mos.	111	919,415	.....	920,441	147,593	304,203	5,310	246,203	753,603	81.9	166,838	47,703	78,752	80,380
Virginian	Dec.	653	2,560,801	4,157	2,635,916	109,376	426,210	27,626	437,976	1,041,486	39.5	1,594,430	919,430	988,950	885,355
	12 mos.	653	27,046,496	35,720	27,837,329	2,083,618	5,272,224	312,541	4,290,234	12,435,500	44.7	15,402,029	8,188,569	8,788,896	9,675,197
Wabash															
Ann Arbor	Dec.	294	397,860	2,405	409,629	29,578	64,782	15,426	179,883	303,921	74.2	105,708	69,689	58,122	79,061
	12 mos.	294	4,580,770	39,396	4,762,722	419,612	838,935	171,204	1,953,677	3,537,687	74.3	1,225,035	821,191	662,367	450,291
Western Maryland	Dec.	859	1,934,094	7,634	2,005,887	179,866	537,470	48,452	604,847	1,444,838	72.0	561,048	355,821	379,388	564,490
	12 mos.	859	21,934,444	95,800	22,810,110	2,654,623	5,166,845	516,597	5,754,696	14,784,973	64.8	8,025,137	5,499,909	5,795,020	5,306,408
Western Pacific	Dec.	1,195	2,216,375	119,342	2,384,101	358,395	393,253	83,634	1,090,898	2,018,720	84.7	365,381	141,253	–18,224	400,867
	12 mos.	1,195	22,781,641	809,490	24,089,163	2,747,372	3,746,435	836,794	8,679,820	16,757,505	69.6	7,331,658	5,757,333	4,223,986	2,646,040
Wheeling & Lake Erie	Dec.	507	1,648,702	3	1,708,786	223,951	321,043	52,556	514,793	1,174,062	68.7	534,724	121,437	271,520	269,959
	12 mos.	507	20,159,231	43	21,221,641	2,598,632	4,010,059	495,883	5,931,953	13,517,799	63.7	7,703,842	2,410,772	3,982,442	4,344,733

Driving Power FOR TANKS



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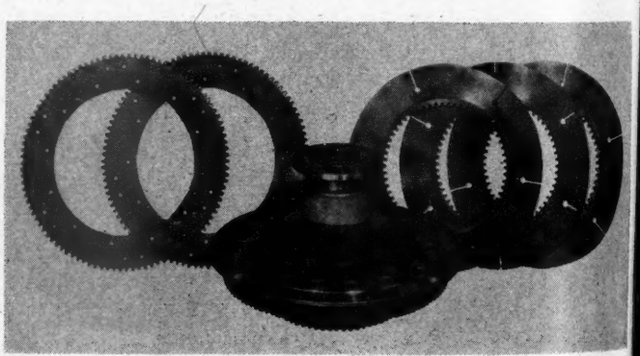

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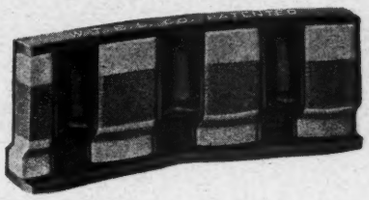

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LOCOMOTIVE and CAR CHARTS

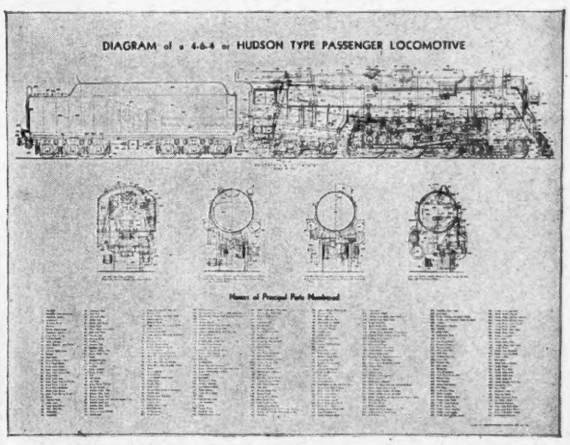

Diagram of 4-6-4 Hudson Type Passenger Locomotive
Shows 315 numbered parts and all the latest appliances. Elevation scale drawings of locomotive and tender and four cross sections. 1941. 40 x 20 inches, flat for wall chart or folded, strong paper, $.50

Chart of 2-8-2 Mikado Freight and of 4-6-2 Pacific Passenger Locomotive
Elevation and four cross section drawings with 308 numbered parts. 1920. 15 x 22 inches, $.15

I.C.C. Defect Chart of a 2-8-2 Mikado
Elevation drawing of locomotive and tender with defects to be looked for by I.C.C. inspectors numbered for reference to U.S. Regulations. 1920. 34 x 22 inches, $.15

Anatomy of a Standard Double-Sheathed Steel-Frame Box Car
Shows seven views of the car and of various sections with 153 parts numbered and named. 1930. 28 x 24 inches, $.15

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